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**N0102-E**

# **USIGS SYSTEM ARCHITECTURE VOLUME II**

## **USIGS INTEROPERABILITY PROFILE (UIP)**

***22 June 1999***

USIGS 2.0 Baseline (As Built)  
USIGS 2.5/3.0 Preliminary Baseline

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**PREFACE**

This document was prepared for the National Imagery and Mapping Agency (NIMA), System Engineering and Integration Division (SOS). The purpose of the United States Imagery and Geospatial Information Service (USIGS) Interoperability Profile (UIP) is to document agreed-to standards affecting USIGS system-to-system interfaces and to describe the current developmental status of USIGS Common Interface specifications:

- Provide a common, consistent, and understandable approach for defining standard software interface implementation practices between multiple clients and services across heterogeneous USIGS applications.
- Assist in effectively integrating USIGS Systems, Technical, and Data Architectures.
- Provide a forum for a Geospatial and Imagery Standards Profile using a time-phased approach for a specific set of USIGS Migration Systems supporting interoperability between DoD and USIGS Systems.
- Provide for the transition in defining (and documenting) the details of specific interface behavior from traditional Interface Control Documents (ICD) characterized by segment-to-segment or system-to-system unique data interchanges to application program interfaces (API) featuring common interface conformance and exhibiting a plug-n-play principle in a distributed computing environment.

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**LIST OF EFFECTIVE PAGES**

Holders of this document will verify that the pages therein comply by page number and date with those indicated below. This document consists of the following pages:

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All (except for Appx 50 &amp; 55)

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TBD/TBR LISTING				
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Effectivity Log	vi	TBD-001		Effectivity date for future Systems/Segments compliance to UIP
4.1.2	14	TBD-003		USIGS Object Services
T4.3.1.1-12	48	TBD-005		Methods for VideoAccessMgr Interface
Appendix 20	139	TBD-027		USIGS Scenarios and Use Cases
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4.1.3.5	23	TBD-036		Information Storage and Retrieval Facility Requirements
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4.1.3.7	23	TBD-038		Workflow Facility Requirements
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## **SECTION 1**

### **INTRODUCTION**

The *USIGS Interoperability Profile (UIP), Volume II of the USIGS Systems Architecture* documents the profiles for software interface standards to be used to achieve interoperability between multiple clients and services within the United States Imagery and Geospatial Information Service (USIGS) architecture.

The UIP is designed to facilitate interoperability and seamless access between multiple clients and services within the Imagery and Geospatial Community (IGC). Key interfaces are defined along with critical data interchange standards to assure interoperability and connectivity among the heterogeneous applications. By outlining a set of standards and standards profiles, the UIP details specific interface behavior, thereby defining the minimum requirements for access and connectivity among these applications.

This document is intended to be referenced by USIGS System/Segment Requirements Documents (RD) as the specification for interfaces to the USIGS Open Geospatial Exchange (OGE) services. In this context it takes the place of the traditional Interface Control Document (ICD). This document should also be referenced in procurement specifications for commercial off-the-shelf (COTS) components that are required to access OGE services.

This document is applicable to the USIGS development programs being managed by NIMA, other organizations, and to those vendors developing products to utilize USIGS services. It contains lower level specifications and usage conventions for those NIMA standards required by these initiatives. It serves to define a common baseline for those developments making up these initiatives and is controlled by the NIMA Configuration Control Board (NCCB). The UIP will be referenced in all applicable NIMA requirements documents and other development Program Office documents that specify software development in support of USIGS initiatives.

## 1.1 Scope

The UIP defines the common, interoperable interfaces, and data interchange interface standards which support interoperability of the USIGS as described by the USIGS Technical Architecture. The interfaces are defined in terms of standards that define an application program interface (API) and the services that are provided through the API, as well as communication protocols and data formats. The UIP does not document legacy interfaces. Legacy interfaces which will co-exist with these common interfaces until phased out are described in a companion volume of the *USIGS System Architecture: Volume III, System/Segment Descriptions*.

## 1.2 Purpose

This interoperability profile is intended to define clearly the implementation requirements that must be met by vendors and development contractors providing the components that will make up the USIGS. Standards are designed to be as broadly applicable as possible and therefore only contain the most general features and data structures. These general features can be used in many different ways by different domains. To guarantee interoperability within a specific domain, developers using these standards, i.e., developers of client and server implementations, must use them in a consistent manner. A “standards profile” provides a list of standards that are applicable to a certain set of systems, like the Joint Technical Architecture (JTA) does for DoD or the USIGS Technical Architecture does for USIGS. A “standard profile” or “profile of a standard” serves to document a specific community’s standards, conventions, and agreed-to procedures on how that general standard is tailored to that community’s requirements. Without these lower level implementation documents to specify the details, it is unlikely that any two developers would make exactly the same interpretation of how to use the standards.

The UIP volume performs three functions:

1. A subset of the Geospatial and Imagery standards in the UTA (system-to-system data interchange and Common Interface specifications) are linked to specific interfaces within the USIGS Systems Architecture.

2. Implementation profiles for those standards are defined to ensure consistent interpretation and application for a specific set of USIGS Migration Systems and thereby enable the interoperability between USIGS components.
3. Effectivities are defined for System/Segment compliance to the common interface requirements consistent with the USIGS Migration Plan.

The UIP documents the current implementation details of the software-based Common Interfaces required for the interaction within and among the various elements of the USIGS. In addition to its use by government developers of these elements, it is expected that commercial vendors will develop products that adhere to these interfaces. An industry consortium, the Open GIS Consortium (OGC), has committed to defining similar interfaces to support interoperable geoprocessing. Interfaces defined by the OGC, as they become available, will be incorporated in this baseline where applicable. In the interim, NIMA will continue to provide leadership in defining critical interfaces to support key acquisition milestones.

### **1.3 Document Organization**

This volume is organized as follows:

Section 1 - *Introduction* contains overview material for this volume of the *USIGS System Architecture*.

Section 2 - *Applicable Documents* contains the list of other documents cited or referenced in the UIP. Together with the requirements specified in Section 4, these documents provide the information needed to understand and implement the implementation profiles.

Section 3 - Not used.

Section 4 - *Interoperability Requirements* contains the specific standards-related interface requirements for each application participating in the USIGS architecture and effectivities for introduction of these capabilities.

Section 5 - *Verification* contains the methods for assuring compliance to the profiles contained in this document.

Section 6 - *Notes* contains definitions and other information that may be useful to the reader.

Appendices -

*NITF Header Specifications* contains details for populating NITF 2.0 and NITF 2.1 header and sub-header fields.

*Scenarios and Use Cases* will contain several scenarios by which users might utilize the capabilities provided by these interfaces within the USIGS context.

*MC&G Imagery Metadata* elements specified in the UIP Addendum (Previously Appendices 50 & 55) shall support user queries of Point Target and MC&G Area Imagery and Image Support Data within the USIGS Systems.

**SECTION 2****APPLICABLE DOCUMENTS****2.1 Government Documents****2.1.1 DoD Documents**

1. C4ISR Architecture Framework 2.0, 18 December 1997
2. DoD Joint Technical Architecture 2.0, 26 May 1998

**2.1.2 NIMA Documents**

The following documents of exact issue shown (identified by revision letter only) and authorized changes form a part of this specification to the extent specified herein:

1. USIGS Architecture Framework (UAF-B), Revision B, 23 June 1998
2. National Imagery Transmission Format Standard (NITFS) Documents:  
**Note: Superceded NITFS related documents may still appear due to applicability to some profiles**  
MIL-HDBK-1300A, National Imagery Transmission Format Standard (NITFS), 12 October 1994  
  
MIL-STD-2500A, National Imagery Transmission Format (Version 2.0) for NITFS, 12 October 1994  
    Notice 1, 7 February 1997  
    Notice 2, 26 September 1997  
    Notice 3, 15 June, 1998  
  
MIL-STD-2500B, National Imagery Transmission Format (Version 2.1) for NITFS, 22 August 1997  
    Notice 1, 2 October 1998

MIL-STD-2301A, Computer Graphics Metafile (CGM) Implementation Standard for the NITFS (National Imagery Transmission Format Standard), 5 June 1998

MIL-STD-188-196, Bi-Level Image Compression for the NITFS, 18 June 1993 Notice 1, 27 June 1996

MIL-STD-188-197A, Adaptive Recursive Interpolated Differential Pulse Code Modulation (ARIDPCM), 12 October 1994

MIL-STD-188-198A, Joint Photographic Experts Group (JPEG) Image Compression for the NITFS, 15 December 1993

Notice 1, 12 October 1994

Notice 2, 14 March 1997

MIL-STD-188-199, Vector Quantization Decompression for the NITFS, 27 June 1994

Notice 1, 27 June 1996

MIL-STD-2045-44500, Tactical Communications Protocol 2 (TACO2), 18 June 1993

Notice 1, 29 July 1994

Notice 2, 27 June 1996

National Imagery Transmission Format Standards (NITFS)  
Certification Test & Evaluation Program Plan, JIEO Circular 9008, 30 June 1993

Errata Sheet dated 20 June 1997

National Imagery Transmission Format Standards (NITFS) Standards Compliance and Interoperability Test & Evaluation Program Plan, N-0105/98, Version 1.0,  
19 June 1998

NIMA NITFS Tagged Record Extension Registry,  
[http://jite.fhu.disa.mil/nitf/tag\\_reg/mast.htm](http://jite.fhu.disa.mil/nitf/tag_reg/mast.htm)

Support Data Extensions (SDE) (Version 1.2) for the National Imagery Transmission Format of the National Imagery Transmission Format Standard, 13  
March 1997

National Imagery Transmission Format Standard Profile for Imagery Access Extensions (PIAE), Version 3.0, 25 Sep 1997  
(as documented in section 6 of Compendium of Controlled Extensions for National Imagery Transmission Format Standard (NITFS), 25 August 1998)

Synthetic Aperture Radar (SAR) Support Data Extensions (SDE) for the National Imagery Transmission Format Standard (NITFS), 20 May 1996  
(as documented in section 8 of Compendium of Controlled Extensions for National Imagery Transmission Format Standard (NITFS), 25 August 1998)

Visible, Infrared, and Multispectral Airborne Sensor Support Data Extensions (SDE) for the National Imagery Transmission Format (NITF) of the National Imagery Transmission Format Standards (NITFS), Version 0.9, 25 Sep 1997  
(as documented in section 10 of Compendium of Controlled Extensions for National Imagery Transmission Format Standard (NITFS), 25 August 1998)

Commercial Electro Optical (EO) Support Data Extensions (SDE) for the National Imagery Transmission Format Standard (NITFS), 25 Sep 1997

(as documented in section 7 of Compendium of Controlled Extensions for National Imagery Transmission Format Standard (NITFS), 25 August 1998)

ICHIPB Support Data Extensions for the National Imagery Transmission Format, 16 November 1998

3. Geospatial and Imagery Access Services (GIAS) Specification, Version 3.3 "As Built", 22 June 1999, , (N0101-E)
4. USIGS Conceptual Data Model (UCDM) , Revision B, 24 November 1998
5. USIGS Technical Architecture (UTA), Revision A, 26 January 1999
6. Compressed Arc Digital Raster Graphic (CADRG), MIL-C-89038, 6 October 1994
7. Digital Feature Analysis Data (DFAD), Level 1, MIL-D-89005, First Edition, 1 July 1994
8. Digital Feature Analysis Data (DFAD), Level 2, MIL-D-89006, First Edition, 1 July 1994
9. Digital Point Positioning Data Base, MIL-PRF-89034, 10. Digital Terrain Elevation Data Level 1 and 2, MIL-PRF-89020A, Edition 2, 19 April 1996
11. Digital Nautical Chart, MIL-PRF-89023 Edition 1, 19 December 1997
12. Digital Topographic Data (DTOP), MIL-D-89037 (Draft), Amendment 2, 1 June 1996
13. Vector Product Format Interim Terrain Data (VITD), MIL-PRF-89040A, Edition 2, 8 May 1996
14. Relocatable Target Assessment Data (RTAD), MIL-R-89013, 30 April 1992
15. Vector Product Format, MIL-STD-2407, Edition 2, 28 June 1996
16. Urban Vector Smart Map (UVMAP), MIL-U-89035 (Draft), 25 May 1995
17. Vector Smart Map (Vmap) Level 0, MIL-PRF-89039, Edition 1, 3 February 1995
18. Vector Smart Map (Vmap) Level 1, MIL-PRF-89033 (Draft), Edition 1, 6 June 1995
19. Vector Smart Map (Vmap) Level 2, MIL-V-89032 (Draft), Amendment 3, 30 September 1993
- 20.
21. World Vector Shoreline (WVSPLUS), MIL-W-89012A (Draft), 30 September 1995
22. DMA World Mean Elevation Data (WMED), Edition 1, PS/1CM/100, 1 January 1985

23. Raster Product Format (RPF), MIL-STD-2411A, 6 Oct 94 with  
Notification Change 1, 17 Jan 1995
24. Integration of Raster Product Format in NITF, MIL-STD-2411-2, 26  
August 1994
25. USIGS Common Object Specification (UCOS), Version 1.3 "As Built",  
22 June 1999
26. Interface Control Document for IPL 1.0, 1947089E, 30 May 1997
27. Arc Digital Raster Graphic, MIL-A-89007, 22 February 1990
28. Controlled Image Base (CIB), MIL-C-89041A, 5 June 1996
29. Associated Performance Specification for Foundation Feature Data  
(FFD) (Draft), MIL-MCGT-0189, 7 July 1997
30. Product Specification for Terrain Contour Matching (TERCOM)  
(Landfall) Matrix/Map Catalog, PS/4GE/100, 1 May 1983
31. Product Specification for Terrain Contour Matching (TERCOM)  
(Enroute/Midcourse) Matrix/Map Catalog, PS/4GF/100, 1 May 1983
32. Product Specification for Terrain Contour Matching (TERCOM)  
(Terminal) Matrix/Map Catalog, PS/4GG/100, 1 May 1983
33. Digital Aeronautical Flight Information File (DAFIF), 5th Edition,  
PS/1FD/086, 1 March 1996
34. Automated Air Facilities Information File (AAFIF), Second Edition,  
PS/1GE/005, 1 February 1997
35. DMA Vertical Obstruction File (DVOF), PS/1GK/100, Edition 1, 1  
April 1987
36. A&D Logical Data Model, 30 September 1998 with "As Built" change  
notification, 22 June 1999
37. Department of Defense/Intelligence Community/United States  
Imagery and Geospatial System (DoD/IC/USIGS) Video Working  
Group Core Video Metadata Profile, 14 Mar 1997
38. DoD/IC/USIGS Video Imagery Standards Profile (VISP), Ver 1.3, 6 March  
1998
39. Department of Defense World Geodetic System (WGS-84), MIL-STD-  
2401, 11 January 1994
40. Geospatial and Imagery Exploitation Services (GIXS), Version 1.0 "As  
Built", 22 June 1999
41. Exploitation and Production (E&P) Logical Data Model, 22 June 1999

42. System Integrated Test Plan for the DIA/DoD Systems, S2008A, TCS055B-BA04410-93

### **2.1.3 National Program Office Documents**

The following documents of exact issue shown (identified by revision letter only) and authorized changes form a part of this specification to the extent specified herein:

1. Tape Formats Requirements Document (TFRD), S2025P, TCS-055B-BA02767-93
2. Defense Dissemination System Enhanced Processing Segment to Receive Segment Interface Control Document, IF20D08P, TCS055B-BA06824-93

## **2.2 Non-Government Documents**

### **2.2.1 Other Standards Documents**

1. Tagged Image File Format (TIFF) Revision 6.0, June 3, 1992
2. CORBA: The Common Object Request Broker Architecture and Specification, Revision 2.1, Object Management Group, Framingham, MA, August, 1997  
Revision 2.2
3. ISO/IEC 13818, Motion Picture Experts Group (MPEG) Document-2
4. GIF 87a, CompuServe Graphics Interchange Format (GIF) Technical Details, June 15, 1987
5. LPS5001, PostScript Language Document Structuring Conventions Specifications, Version 3.0, 25 September 1992, Adobe Systems Incorporated
6. REC-html-971218, HTML, Internet Version 4.0, Reference Specification, W3C, 18  
Dec 1997
7. Solaris System Software Answer Book, Sun Microsystems
8. Digital Geographic Information Exchange Standard (DIGEST), Edition 1.2, 1  
January 1994
9. OMG document formal/98-02-01, CORBA/IIOP 2.2, The Common Object Request

Broker: Architecture and Specification, 1 February 1998

### **2.3 Other Documents**

These documents provide additional information which may facilitate a reader's understanding of the material contained within this volume:

1. CORBAfacilities: The Common Facilities Architecture, Version 4.0, Object Management Group, Framingham, MA, November, 1995
2. CORBAservices: Common Object Services Specification, Revised Edition, Object Management Group, Framingham, MA, March, 1995
3. Object Query Service Specification: Joint Submission, Document 95.1.1, Object Management Group, Framingham, MA, December, 1993
4. National Imagery and Mapping Agency (NIMA) and Rome Laboratory Joint Requirements Document for the United States Imagery and Geospatial Information System (USIGS) 2000 Accelerated Architecture Acquisition Initiative, (NRLJRD), Version 1.1, 25 March 1997
5. NIMA Library Requirements Document,, (NLRD B), 25 August 1998
6. The National Imagery Transmission Format Standard (NITFS) 5 Year Program Plan, NNPP 1.0, 1 September 1998
7. Information Access Services (IAS) Requirements Document, 1 March 1999
8. Compendium of Controlled Extensions for National Imagery Transmission Format Standard (NITFS), 25 August 1998
9. Dissemination Element (DE) Requirements Document, D4-DE-A, 26 January 1998
10. Integrated Exploitation Capability (IEC) Requirements Specification, Version 2.0, 14 May 1999

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**SECTION 3**

**NOT USED**

**SECTION 4****INTEROPERABILITY REQUIREMENTS**

The following USIGS Systems/Segments shall conform to the interoperability requirements specified in Section 4. The effectivities (Exx) indicate an initial common interface (GIAS, GIXS, ...) capability for the System/Segment.

1. NIMA Archive and Dissemination Applications:
  - a. NIMA Libraries (NL) (E2.0)
  - b. Image Product Library (IPL) (E3.0)
  - c. Information Access Services (IAS) (E1.0)
  - d. NIMA Common Client (CC) (E1.0)
  - e. Dissemination Element (DE) (E2.0)
  - f. Digital Products Data Warehouse (DPDW-2) (ENL & >NL)
2. NIMA Exploitation Applications:
  - a. Integrated Exploitation Capability (IEC) (E2.0)
  - b. Front End Processing Environment (FPE) (E3.5)
  - c. Multi-Source Intelligence Toolkit (MINT) (E2.0)
3. NIMA Management Applications:
  - a. Imagery Exploitation Support System (IESS) Enhanced Analyst Client (E1.5)
  - b. National Exploitation System (NES) (E3.0)
  - c. Geospatial Information Management Data Environment 2000 (GIMDE 2K) (E2.5)
4. Non-NIMA USIGS Applications:
  - a. DARO Comm Non-NIMA USIGS Applications on Imagery Processor (CIP) (Exx)
5. Other Client Applications (including COTS) requiring access or interface to the USIGS Services.

**4.1 Infrastructure Services**

The system-specific standards profiled in the UIP are not intended to provide a complete list of standards which USIGS systems must support. For non-geospatial and imagery standards, each applicable system in the UIP is to comply with

mandated standards in the UTA Profile and the JTA. Reference information can be located in Tables 3-1 and 3-2 of the UTA or in appropriate sections of the JTA.

#### **4.1.1 Information Transfer Services**

Systems/Segments shall conform to the standards specified in the *DoD Joint Technical Architecture, Ver. 2.0*

[Note: The following paragraphs, 4.1.2 - 4.1.3 contain placeholders for profiles for the USIGS Object Services and Common Facilities as defined in the *USIGS Technical Architecture*. These profiles will be defined as required as the APIs for these services are defined.]

#### **4.1.2 Object Services**

TBD-003

#### **4.1.3 Common Facilities**

##### **4.1.3.1 Profile Service**

Systems/Segments providing Profile Service and/or requiring access to Profile Service shall conform to the Application Program Interfaces (API) for the Profile Service as defined in *USIGS Common Object Specification (UCOS)*, , per Table 4.1.3.1-1. Table 4.1.3.1-1 indicates whether the system is a *bearer* (B) or presenter of the interface, the *audience* (A) or caller of the interface, or both. Effectivities are indicated as appropriate.

Interfaces in Table 4.1.3.1-1 shall be implemented by each specified USIGS System in accordance with the implementation details specified in paragraph 4.1.3.1.1.

**Table 4.1.3.1-1 - USIGS Implementation of Profile Service**

	NL		IPL		IAS s		Common Client				IAS NL Broker				DPDW-2	
	B	A	B	A	B	A	B	A			B	A			B	A
<b>interface ProfileMgr</b>																
<b>get_profile</b>	2.0		3.0		1.5			1.5			2.0				EN	L
<b>interface Profile</b>																
<b>get_profile_element_types</b>	2.0		3.0		1.5			1.5			2.0				EN	L
<b>get_profile_element</b>	2.0		3.0		1.5			1.5			2.0				EN	L
<b>get_last_update_time</b>	2.0		3.0		1.5			1.5			2.0				EN	L
<b>interface ProfileElement</b>																
<b>get_last_update_time</b>	2.0		3.0		1.5			1.5			2.0				EN	L
<b>interface BasicProfile:ProfileElement</b>																
<b>get_user_information</b>	2.0		3.0		1.5			1.5			2.0				EN	L

	<b>NL</b>		<b>IPL</b>		<b>IAS s</b>		<b>Common Client</b>				<b>IAS NL Broker</b>				<b>DPDW-2</b>	
	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>		<b>B</b>	<b>A</b>			<b>B</b>	<b>A</b>	
<b>set_user_information</b>	2.0		3.0		1.5			1.5		2.0				EN L		
<b>get_security_information</b>	2.0		3.0		1.5			1.5		2.0				EN L		
<b>get_available_preferences</b>	4.0		3.0		1.5			1.5		2.0				>N L		
<b>get_preference_domain</b>	4.0		3.0		1.5			1.5		2.0				>N L		
<b>get_user_preference</b>	4.0		3.0		1.5			1.5		2.0				>N L		
<b>get_user_preferences</b>	4.0		3.0		1.5			1.5						>N L		
<b>set_user_preference</b>	4.0		3.0		1.5			1.5						>N L		
<b>set_user_preferences</b>	4.0		3.0		1.5			1.5						>N L		
<b>interface GIASProfile:ProfileElement</b>																
<b>add_submitted_order</b>	4.0		3.0		2.0			2.0		2.0				>N L		

	<b>NL</b>		<b>IPL</b>		<b>IAS s</b>		<b>Common Client</b>				<b>IAS NL Broker</b>				<b>DPDW-2</b>	
	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>			<b>B</b>	<b>A</b>			<b>B</b>	<b>A</b>
<b>remove_submitted_order</b>	4.0		3.0		2.0			2.0			2.0				>N L	
<b>list_submitted_order</b>	4.0		3.0		2.0			2.0			2.0				>N L	
<b>add_personal_order</b>	4.0		3.0		1.5			1.5			2.0				>N L	
<b>remove_personal_order</b>	4.0		3.0		1.5			1.5			2.0				>N L	
<b>get_personal_order</b>	4.0		3.0		1.5			1.5			2.0				>N L	
<b>list_personal_orders</b>	4.0		3.0		1.5			1.5			2.0				>N L	
<b>add_personal_query</b>	4.0		3.0		1.5			1.5			2.0				>N L	
<b>remove_personal_query</b>	4.0		3.0		1.5			1.5			2.0				>N L	
<b>get_personal_query</b>	4.0		3.0		1.5			1.5			2.0				>N L	
<b>list_personal_queries</b>	4.0		2.0		1.5			1.5			2.0				>N L	

	<b>NL</b>		<b>IPL</b>		<b>IAS s</b>		<b>Common Client</b>				<b>IAS NL Broker</b>				<b>DPDW-2</b>	
	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>			<b>B</b>	<b>A</b>			<b>B</b>	<b>A</b>
<b>add_standing_query</b>	4.0		3.0		1.5			1.5			2.0				>N L	
<b>remove_standing_query</b>	4.0		3.0		1.5			1.5			2.0				>N L	
<b>list_standing_queries</b>	4.0		3.0		1.5			1.5			2.0				>N L	
<b>add_standing_order</b>	4.0		3.0		1.5			1.5			2.0				>N L	
<b>remove_standing_order</b>	4.0		3.0		1.5			1.5			2.0				>N L	
<b>list_standing_orders</b>	4.0		3.0		1.5			1.5			2.0				>N L	
<b>add_submitted_query</b>	4.0		3.0		1.5			1.5			2.0				>N L	
<b>remove_submitted_query</b>	4.0		3.0		1.5			1.5			2.0				>N L	
<b>list_submitted_queries</b>	4.0		3.0		1.5			1.5			2.0				>N L	

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B = Bearer, A = Audience, NL = NIMA Library, IPL = Image Product Library, IAS = Information Access Services, CC = Common Client, DPDW = Digital Production Data Warehouse, IAS NL Broker = Information Access Services Nima Library Broker

#### 4.1.3.1.1 Profile Service Implementation Details

Systems/Segments shall implement the Profile Service Facility as specified in the UCOS, Version 1.2A, Appendix B, in accordance with the information specified in Tables 4.1.3.1.1-1 through 4.3.1.1.1-5.

**Table 4.1.3.1.1-1 Profile Service Implementation Detail for ProfileMgr Interface**

Method	Return/ Parameter	Type	Desc/Value(s)
get_profile	[return]	Profile	N/A
	access_criteria	UCO::NameValueList	UserID==string=recognized and valid user name Password=string=corresponding valid user password for the submitted UserID

**Table 4.1.3.1.1-2 Profile Service Implementation Detail for Profile Interface**

Method	Return/ Parameter	Type	Desc/Value(s)
get_profile_element_types	[return]	ProfileElementTypeList	“Basic”   “GIAS” values as outlined in UCOS (section 3 ProfileElementTypes using the structure Profile ElementTypeList)
get_profile_element	[return]	ProfileElement	Object Reference for the requested Profile Element
	element_type	ProfileElementType	“Basic”   “GIAS” values as outlined in UCOS (section 3 ProfileElementTypes)
get_last_update_time	[return]	UCO::AbsTime	Return date time group in Greenwich Mean Time (GMT) that profile was last updated

**Table 4.1.3.1.1-3 Profile Service Implementation Detail for ProfileElement Interface)**

Method	Return/ Parameter	Type	Desc/Value(s)

get_last_update_time	[return]	UCO::AbsTime	Return date time group in GMT that the ProfileElement was last updated
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**Table 4.1.3.1.1-4 Profile Service Implementation Detail for BasicProfile: ProfileElement Interface**

Method	Return/Parameter	Type	Desc/Value(s)
get_user_information	info	UserInformation	User information currently in the User Profile
set_user_information	info	UserInformation	User information currently in the User Profile
get_security_information	info	SecurityInformation	User's security information currently in the User Profile
get_available_preferences	names	PreferenceNameList	List of preferences supported by the User Profile
get_preference_domain	preference_name	<string>	Name of preference whose domain is requested
	domain	GIAS::Domain	Domain of the specified preference
get_user_preference	Preference_name	<string>	Name of preference whose information is requested
	preference	UserPreference	Information for the specified preference
get_user_preferences	list	UserPreferenceList	List of preference information for all of the preferences supported by the User Profile
set_user_preference	preference	UserPreference	Preference information to be set in the User Profile
set_user_preferences	preferences	UserPreferenceList	List of preference information to be set in the User Profile

**Table 4.1.3.1.1-5 Profile Service Implementation Detail for GIASProfile:ProfileElement Interface**

Method	Return/Parameter	Type	Desc/Value(s)
add_submitted_order	[return]	PRID	ID for the new saved submitted

			order
	order	GIAS::OrderRequest	Request object of submitted order to be saved
	name	String	Name of submitted order
remove_submitted_order	order	PRID	ID of the submitted order to be removed
list_submitted_orders	orders	SubmittedOrderList	List of the submitted orders currently saved in the User Profile
add_personal_order	[return]	PRID	ID for the new saved order
	order	PersonalOrder	Order information to be saved
remove_personal_order	order_id	PRID	ID of the order to be removed
get_personal_order	order_id	PRID	ID of the order to be retrieved
	order	PersonalOrder	The retrieved order information
list_personal_orders	orderIDs	PersonalOrderNameList	List of order names currently listed in the User Profile
add_personal_query	query	PersonalQuery	Query information to be saved
remove_personal_query	query_id	PRID	ID of the query to be removed
get_personal_query	query_id	PRID	ID of the query to be retrieved
	query	PersonalQuery	The retrieved query
list_personal_queries	queries	PersonalQueryNameList	List of query names currently listed in the User Profile
add_standing_query	[return]	PRID	ID of the new saved standing query
	query	GIAS::SubmitStandingQueryRequest	Request object of standing query to be saved
	name	String	Name of saved standing query
remove_standing_query	query	PRID	ID of the standing query to be removed
list_standing_queries	queries	StandingQueryList	List of standing queries currently saved in the User Profile
add_standing_order	[return]	PRID	ID of the new saved standing order
	query	GIAS::SubmitStandingQueryRequest	Request object of the standing query part of the standing order to be saved
	order	PersonalOrder	Order information part of the standing order to be saved
remove_standing_order	order	PRID	ID of the standing order to be removed
list_standing_orders	orders	StandingOrderList	
add_submitted_query	[return]	PRID	ID of the new saved submitted query
	query	GIAS::SubmittedQueryRequest	Request object of the submitted query to be saved

	name	String	Name of the submitted query
remove_submitted_query	query	PRID	ID of the submitted query to be removed
list_submitted_queries	queries	SubmittedQueryList	List of submitted queries currently saved in the User Profile

#### 4.1.3.2 Implementation Discovery Service

Systems/Segments providing Implementation Discovery Service and/or requiring access to Implementation Discovery Service shall conform to the Application Program Interfaces (API) for the Implementation Discovery Service as defined in *USIGS Common Object Specification (UCOS)*, per Table 4.1.3.2-1. Table 4.1.3.2-1 indicates whether the system is a *bearer* (B) or presenter of the interface, the *audience* (A) or caller of the interface, or both. Effectivities are indicated as appropriate.

Interfaces in Table 4.1.3.2-1 shall be implemented by each specified USIGS System in accordance with the implementation details specified in paragraph 4.1.3.2.1.

**Table 4.1.3.2-1 - USIGS Implementation of Implementation Discovery Service**

	NL		IPL		IAS		Common Client				IEC		IAS NL Broker		NES		DPDW -2	
	B	A	B	A	B	A	B	A			B	A	B	A	B	A	B	A
<b>Interface ImplDiscSvc</b>																		
<b>get_interface_names</b>	4.0		3.0		2.0		2.0				3.5		2.0			3.0	>NL	
<b>get_method_names</b>	4.0		3.0		2.0		2.0				3.5		2.0			3.0	>NL	

B = Bearer, A = Audience, NL = NIMA Library, IPL = Image Product Library, IAS = Information Access Services, CC = Common Client, IEC = Integrated Exploitation Capability, , IAS NL Broker = Information Access Services Nima Library Broker, NES = National Exploitation System, DPDW = Digital Production Data Warehouse

4.1.3.1.1 Implementation Discovery Service Facility Implementation Details  
 Systems/Segments shall implement the Implementation Discovery Service as specified in the UCOS, Version 1.3, in accordance with the information specified in Tables 4.1.3.2.1-1.

**Table 4.1.3.2.1-1 Profile Service Implementation Detail for *ImplDiscSvc* Interface**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
get_interface_names	[return]	InterfaceNameList	Set of interface names supported by the server and formatted as follows: "Module/Interface"
get_method_names	[return]	MethodNameList	Set of method names supported by the server for the specified interface
	interfaceName	InterfaceName	Name of interface for which the method names are to be retrieved

4.1.3.3 Data Interchange Facility (TBD-034)

4.1.3.4 Imagery Compression Facility (TBD-035)

4.1.3.5 Information Storage and Retrieval Facility (TBD-036)

4.1.3.6 Security Administration Facility (TBD-037)

4.1.3.7 Workflow Facility (TBD-038)

## **4.2 Distributed Computing Services**

Systems/Segments shall utilize a common set of Distributed Computing Services for exchanging information as specified in *OMG-The Common Object Request Broker: Architecture and Specification (CORBA), Version 2.1.*

### **4.2.1 Object Request Broker Interoperability**

Object Request Brokers (ORBs) utilized for the USIGS shall support the Internet Inter-ORB Protocol (IIOP) for inter-ORB communication.

### **4.2.2 Service IORs and Client/Service Binding**

Service providers shall provide an FTP server, which contains CORBA IORs to support client binding. Clients shall support execution of an anonymous FTP to these servers and retrieve a file(s) containing the IOR strings for use by clients in binding to Services.

The file name and format for the IOR file are: <directory>/<filename> where file name is  
<spec name>\_<module  
name>\_<service>.or

For example:

NL uses /pub/GIAS\_GIAS\_Library.or  
where pub directory is a logical path.  
IEC uses /h/data/global/iec/data/pub/GIXS\_XBS\_BufferManager.or

Format: consisting of an ASCII file containing the IOR string.

## **4.3 Open Geospatial Exchange (OGE) Services**

This Section contains the minimum set of requirements needed to achieve interoperability between Systems/Segments exchanging geospatial information data within the USIGS.

### **4.3.1 Geospatial Domain Access Services**

#### **4.3.1.1 Geospatial and Imagery Access Services**

Systems/Segments providing Geospatial Domain Access Services and/or requiring access to Geospatial Domain Access Services shall conform to the Application

Program Interfaces (API) as defined in *Geospatial and Imagery Access Services (GIAS) Specification*, per Table 4.3.1-1. Table 4.3.1-1 indicates whether the system is a *bearer* (B) or presenter of the interface, the *audience* (A) or caller of the interface, or both. Effectivities are indicated as appropriate.

Interfaces in Table 4.3.1-1 shall be implemented by each specified USIGS System in accordance with the implementation details specified in paragraph 4.3.1.1.

**Table 4.3.1-1 - USIGS Implementation of Geospatial and Imagery Access Services**

	NL		IPL		IAS NL Broke r		IAS		Commo n Client		IESS EAC		IEC		DE		NES		DPDW-2	
	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
<b>Interface Library</b>																				
<b>get_manager_types</b>	1.5	4.0	3.0	3.0	2.0		1.0	2.5		1.0		1.5				2.0		3.0	ENL	>N L
<b>get_access_criteria</b>	1.5	4.0	3.0		2.0		1.0	2.5		1.0		1.5				2.0		3.0	ENL	>N L
<b>get_manager</b>	1.5	4.0	3.0	3.0	2.0		1.0	2.5		1.0		1.5		2.0		2.0		3.0	ENL	>N L
<b>get_library_description</b>	1.5	4.0	3.0		2.0		1.0	2.5				1.5						3.0	ENL	>N L
<b>get_other_libraries</b>	1.5	4.0	3.0	3.0	2.0		1.5	2.5		1.5		1.5							ENL	>N L
<b>interface LibraryManager</b>																				
<b>get_property_names</b>	2.0	4.0	3.0	3.0			1.5	2.5		1.5									ENL	>N L

	NL		IPL		IAS NL Broke r		IAS		Commo n Client		IESS EAC		IEC		DE See Not e 1 below		NES		DPDW-2			
	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
<b>get_property_values</b>	2.0	4.0	3.0	3.0			1.5	2.5		1.5											ENL >N L	
<b>get_libraries</b>	2.0	4.0	3.0	3.0																	ENL >N L	
<b>interface</b> <b>RequestManager</b>																						
<b>get_active_requests</b>	1.5	4.0	3.0	3.0			1.0	2.5		1.5		1.5					2.0		3.0	ENL >N L		
<b>get_default_timeout</b>	1.5	4.0	3.0	3.0			1.0	2.5		1.5		1.5							3.0	ENL >N L		
<b>set_default_timeout</b>	1.5	4.0	3.0	3.0			1.0	2.5		1.5		1.5							3.0	ENL >N L		
<b>get_timeout</b>	1.5	4.0	3.0	3.0			1.5	2.5		1.5		1.5							3.0	ENL >N L		
<b>set_timeout</b>	1.5	4.0	3.0	3.0			1.5	2.5		1.5		1.5							3.0	ENL >N L		
<b>delete_request</b>	1.5	4.0	3.0	3.0			1.0	2.5		1.0		1.5		-		2.0		3.0	ENL >N L			

	NL		IPL		IAS NL Broker		IAS		Commun Client		IESS EAC		IEC		DE See Note 1 below		NES		DPDW-2	
	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
<b>interface AccessManager: RequestManager</b>																				
<b>get_use_modes</b>	2.0	4.0	3.0	3.0			1.5	2.5		1.5		1.5						3.0	ENL	>NL
<b>is_available</b>	1.5	4.0	3.0	3.0			1.5	2.5		1.5		1.5						3.0	ENL	>NL
<b>query_availability_delay</b>	2.0	4.0	3.0	3.0			1.5	2.5		1.5		1.5						3.0	ENL	>NL
<b>set_availability</b>	1.5	4.0	3.0	3.0			1.5	2.5		1.5		1.5						3.0	ENL	>NL
<b>interface OrderMgr: LibraryManager, AccessManager</b>																				
<b>get_number_of_priorities</b>	1.5	4.0					1.5	2.5		1.5		1.5						3.0	ENL	>NL
<b>get_package_specification</b>	1.5	4.0					1.5	2.5		1.5		1.5						3.0	ENL	>NL

	NL		IPL		IAS NL Broker		IAS		Commun e Client		IESS EAC		IEC		DE See Note 1 below		NES		DPDW-2	
	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
<b>validate_order</b>	1.5	4.0	3.0	3.0			1.0	2.5		1.0		1.5		2.0				3.0	ENL	>NL
<b>order</b>	1.5	4.0	3.0	3.0			1.0	2.5		1.0		1.5		2.0				3.0	ENL	>NL
<b>interface DataModelMgr: LibraryManager</b>																				
<b>get_data_model_date</b>	2.0	4.0	3.0		2.0		1.5	2.5		1.0									ENL	>NL
<b>get_alias_categories</b>	2.0		3.0		2.0		1.5	2.5		1.0									ENL	
<b>get_logical_aliases</b>	2.0		3.0		2.0		1.5	2.5		1.0									ENL	
<b>get_logical_attribute_name</b>	2.0		3.0		2.0		1.0	2.5		1.0									ENL	
<b>get_data_views</b>	2.0	4.0	3.0		2.0		1.0	2.5		1.0									ENL	>NL
<b>get_attributes</b>	2.0	4.0	3.0		2.0		1.0	2.5		1.0									ENL	>NL

	NL		IPL		IAS NL Broker		IAS		Commun Client		IESS EAC		IEC		DE See Note 1 below		NES		DPDW-2	
	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
<b>get_queryable_attributes</b>	2.0	4.0	3.0		2.0		1.0	2.5		1.0									ENL	>NL
<b>get_entities</b>	2.0	4.0	3.0		2.0		1.5	2.5		1.5									ENL	>NL
<b>get_entity_attributes</b>	2.0	4.0	3.0		2.0		1.5	2.5		1.5									ENL	>NL
<b>interface CreationMgr: LibraryManager, RequestManager, UpdateManager</b>																				
<b>create</b>	2.0		3.0				1.5	2.5		1.5							2.0		ENL	
<b>create_metadata</b>	4.0		3.0				1.0	2.5											>NL	
<b>UpdateManager: LibraryManager, RequestManager</b>																				
<b>update</b>			3.0				2.0	2.5		2.5									>NL	
<b>release_lock</b>			3.0				2.0	2.5		2.5									>NL	

	NL		IPL		IAS NL Broker		IAS		Commun Client		IESS EAC		IEC		DE See Note 1 below		NES		DPDW-2	
	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
<b>interface</b> <b>CatalogAccessMgr:</b> <b>LibraryManager,</b> <b>RequestManager</b>																				
<b>submit_query</b>	1.5	4.0	3.0	3.0			1.0	2.5		1.0		1.5						3.0	ENL	>NL
<b>hit_count</b>	2.0	4.0	3.0				1.0	2.5		1.0		2.0						3.0	ENL	>NL
<b>interface</b> <b>StandingQueryMgr:</b> <b>LibraryManager,</b> <b>RequestManager</b>																				
<b>get_event_descriptions</b>	1.5	4.0			2.0													ENL	>NL	
<b>submit_standing_query</b>	1.5	4.0	3.0		2.0		1.5	2.5		1.5		1.5					3.0	ENL	>NL	

	NL		IPL		IAS NL Broker		IAS		Commoo n Client		IESS EAC		IEC		DE See Note 1 below		NES		DPDW-2	
	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
<b>interface</b> <b>ProductAccessMgr:</b> <b>LibraryManager,</b> <b>AccessManager</b>																				
<b>get_parameters</b>	1.5	4.0	3.0				1.0	2.5		1.0		1.5		2.0				3.0	ENL	>NL
<b>get_related_file_types</b>					2.5		2.0	2.5		2.5										
<b>get_related_files</b>					2.5		2.0	2.5		2.5										
<b>get_browse_image</b>	1.5	4.0	3.0				1.0	2.5		1.0		1.5						3.0	N/A	N/A
<b>interface IngestMgr:</b> <b>LibraryManager,</b> <b>RequestManager</b>																				
<b>bulk_pull</b>																				
<b>bulk_push</b>																				
<b>interface VideoAccessMgr</b> <b>: LibraryManager,</b> <b>AccessManager</b>																				
<b>TBD</b>																				

	NL		IPL		IAS NL Broker		IAS		Commun e Client		IESS EAC		IEC		DE See Note 1 below		NES		DPDW-2	
	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
<b>interface Request</b>																				
<b>get_request_description</b>	1.5	4.0	3.0		2.0	2. 0	1.5	2.5		1.5		1.5				2.0		3.0	ENL	>N L
<b>set_user_info</b>	1.5	4.0	3.0		2.0	2. 0	1.5	2.5		1.5		1.5				2.0		ENL	>N L	
<b>get_status</b>	1.5	4.0	3.0	2.0	2.0	2. 0	1.0	2.5		1.0		1.5				2.0		3.0	ENL	>N L
<b>get_remaining_delay</b>	1.5	4.0	3.0	3.0	2.0	2. 0	1.5	2.5		1.5		1.5						3.0	ENL	>N L
<b>cancel</b>	1.5	4.0	3.0	3.0	2.0	2. 0	1.0	2.5		1.0		1.5				2.0		3.0	ENL	>N L
<b>register_callback</b>	1.5	4.0	3.0	3.0	2.0	2. 0	1.5	2.5		1.5		1.5						3.0	ENL	>N L
<b>free_callback</b>	1.5	4.0	3.0	3.0	2.0	2. 0	1.5	2.5		1.5		1.5						3.0	ENL	>N L
<b>get_request_manager</b>	1.5	4.0	3.0	3.0	2.0	2. 0	1.5	2.5		1.5		1.5						3.0	ENL	>N L

	NL		IPL		IAS NL Broker		IAS		Commun Client		IESS EAC		IEC		DE See Note 1 below		NES		DPDW-2	
	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
<b>interface OrderRequest: Request</b>																				
<b>complete</b>	1.5	4.0	3.0	3.0			1.0	2.5		1.0		1.5		2.0				3.0	ENL	>NL
<b>interface CreateRequest: Request</b>																				
<b>complete</b>	2.0		3.0				1.5	2.5		1.5								ENL		
<b>interface CreateMetaDataRequest: Request</b>																				
<b>complete</b>	4.0		3.0	3.0			1.0	1.5											>NL	
<b>interface SubmitStanding OrderRequest:Request</b>																				
<b>pause</b>	4.0	4.0																>NL	>NL	
<b>restart</b>	4.0	4.0																>NL	>NL	

	NL		IPL		IAS NL Broker		IAS		Commun Client		IESS EAC		IEC		DE See Note 1 below		NES		DPDW-2	
	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
<b>complete</b>	4.0	4.0																	>NL	>NL
<b>Interface StandingOrderMgr:</b>																				
<b>LibraryManager:Request Manager</b>																				
<b>get_event_descriptions</b>	4.0	4.0																	>NL	>NL
<b>submit_standing_order</b>	4.0	4.0																	>NL	>NL
<b>interface SubmitQueryRequest:Request</b>																				
<b>set_number_of_hits</b>	1.5	4.0	3.0	3.0			1.0	2.5		1.0		1.5						3.0	ENL	>NL
<b>complete</b>	1.5	4.0	3.0	3.0			1.0	2.5		1.0		1.5						3.0	ENL	>NL

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	NL		IPL		IAS NL Broke r		IAS		Commo n Client		IESS EAC		IEC		DE See Not e 1 below		NES		DPDW-2	
	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
<b>interface SubmitStanding</b>																				
<b>QueryRequest:Request</b>																				
<b>set_number_of_hits</b>	1.5	4.0	3.0	3.0	2.0		1.5	2.5		1.5								3.0	ENL	>N L
<b>get_number_of_hits</b>	4.0	4.0	3.0	3.0	2.0		1.5	2.5		1.5									>NL	>N L
<b>get_number_of_hits_in_</b>	4.0	4.0	3.0	3.0	2.0		1.5	2.5		1.5									>NL	>N L
<b>get_number_of_intervals</b>	4.0	4.0	3.0	3.0	2.0		1.5	2.5		1.5									>NL	>N L
<b>clear_all</b>	4.0	4.0	3.0	3.0	2.0		1.5	2.5		1.5									>NL	>N L
<b>clear_intervals</b>	4.0	4.0	3.0	3.0	2.0		1.5	2.5		1.5									>NL	>N L
<b>clear_before</b>	4.0	4.0	3.0	3.0	2.0		1.5	2.5		1.5									>NL	>N L
<b>pause</b>	4.0	4.0	3.0	3.0	2.0		1.5	2.5		1.5									>NL	>N L

	NL		IPL		IAS NL Broker		IAS		Commun Client		IESS EAC		IEC		DE See Note 1 below		NES		DPDW-2	
	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
<b>restart</b>	4.0	4.0	3.0	3.0	2.0		1.5	2.5		1.5									>NL	>NL
<b>get_time_last_executed</b>	4.0	4.0	3.0	3.0	2.5		2.5	2.5		2.5									>NL	>NL
<b>get_time_next_execution</b>	4.0	4.0	3.0	3.0	2.5		2.5	2.5		2.5									>NL	>NL
<b>complete</b>	2.0	4.0	3.0	3.0	2.0		1.5	2.5		1.5		1.5						3.0	ENL	>NL
<b>interface SetAvailability Request:Request</b>																				
<b>complete</b>	1.5	4.0	3.0	3.0			1.5	2.5		1.5		1.5						3.0	ENL	>NL
<b>Interface GetRelatedFiles Request:Request</b>																				
<b>complete</b>							2.0	2.5		2.5										
<b>interface HitCountRequest: Request</b>																				

	NL		IPL		IAS NL Broker		IAS		Commun Client		IESS EAC		IEC		DE See Note 1 below		NES		DPDW-2	
	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
<b>complete</b>	2.0	4.0	3.0	3.0			1.0	2.5		1.0		1.5						3.0	ENL	>NL
<b>interface GetParametersRequest:Request</b>																				
<b>complete</b>	1.5	4.0	3.0				1.0	2.5		1.0		1.5		2.0				3.0	ENL	>NL
<b>interface IngestRequest:Request</b>																				
<b>complete</b>	4.0	4.0	3.0	2.0			1.5	1.5											>NL	>NL
<b>interface GetBrowseImageRequest:Request</b>																				
<b>complete</b>	1.5	4.0	3.0				1.0	2.5		1.0		1.5						3.0		>NL
<b>interface UpdateRequest:Request</b>																				

	NL		IPL		IAS NL Broker		IAS		Common Client		IESS EAC		IEC		DE		NES		DPDW-2	
	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
<b>complete</b>			3.0				2.0	2.5		2.5										
<b>interface Callback</b>																				
<b>notify</b>	2.0	1.5	3.0	3.0			1.5	1.5	1.5		1.5						3.0		ENL	ENL
<b>release</b>	2.0	1.5	3.0	3.0			1.5	1.5	1.5		1.5						3.0		ENL	ENL

B = Bearer, A = Audience, NL = NIMA Library, IPL = Image Product Library, IAS NL Broker = Information Access Services NIMA Library Broker, IAS = Information Access Services, CC = Common Client, IECC EAC = IECC Enhanced Analyst Client, IEC = Integrated Exploitation Capability, DE = Dissemination Element, NES = National Exploitation System, DPDW = Digital Production Data Warehouse

Note 1: The DE is currently building to GIAS 3.2, however the limitations of the documentation pose problems on how to depict this directly in the tables.

4.3.1.1.1 Geospatial and Imagery Access Services Facilities Implementation Details  
 Systems/Segments shall implement the Geospatial and Imagery Access Facility as specified in the *Geospatial and Imagery Access Services Specification* in accordance with the information specified in Tables 4.3.1.1-1 through 4.3.1.1-26. The Management Data Library (MDL) will use an abbreviated DAG as described in 4.3.1.2.

**Table 4.3.1.1-1 Geospatial and Imagery Access Services Implementation Detail for Library Interface**

Method	Return/ Parameter	Type	Desc/Value(s)
<b>get_manager_types</b>	[return]	<b>ManagerTypeList</b> sequence<string>	“OrderMgr” ; “CreationMgr” ; “CatalogAccessMgr” ; “StandingQueryMgr” ; “ProductAccessMgr” ; “IngestMgr” ; “DataModelMgr” “StandingOrderMgr” “UpdateMgr”
<b>get_access_criteria</b>	[return]	<b>UCO:: NameValueList</b>	UserID<boolean> TRUE if UserID required, otherwise FALSE; Password<boolean> TRUE if Password required, otherwise FALSE; LicenseID<boolean> TRUE if LicenseID required, otherwise FALSE
			If manager_type="CatalogAccessMgr"   "DataModelMgr"   "StandingQueryMgr"   "StandingOrderMgr":  <b>LibrariesToUse</b> <boolean> TRUE if LibrairesToUse is required, otherwise FALSE
	<b>manager_type</b>	<b>ManagerType</b> <string>	“OrderMgr” ; “CreationMgr” ; “CatalogAccessMgr” ; “StandingQueryMgr” ; “ProductAccessMgr” ;

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
			“IngestMgr” ; “DataModelMgr” “StandingOrderMgr” “UpdateMgr”
<b>get_manager</b>	<b>LibraryManager</b>	[Object]	N/A
	<b>manager_type</b>	<b>ManagerType</b> <string>	“OrderMgr” ; “CreationMgr” ; “CatalogAccessMgr” ; “StandingQueryMgr” ; “ProductAccessMgr” ; “IngestMgr” ; “DataModelMgr” “StandingOrderMgr” “UpdateMgr”
	<b>access_criteria</b>	<b>UCO:: NameValueList</b>	<p>UserID=&lt;string&gt;recognized and valid user name</p> <p>Password=&lt; string&gt;corresponding valid user password for the submitted UserID</p> <p>LicenseID=&lt; string&gt;valid License identifier for access to commercial products</p> <p>LibrariesToUse=&lt;UCO::NameList&gt; a set of “library_name”s to be considered by the requested manager</p>
<b>get_library_description</b>	[return]	<b>LibraryDescription</b>	<p><b>library_name</b>&lt;string&gt;Valid Library identifier as defined in USIGS Naming Conventions (USIGS Technical Architecture, para. 5.1.1[TBR-039])</p> <p><b>library_description</b>&lt;string&gt; Organizational affiliation of Library</p> <p><b>library_version</b> &lt;string&gt;Version number = "3.1", "3.2", 3.2A, or "3.3" to indicate library's implementation of a particular GIAS version</p>
<b>get_other_libraries</b>	[return]	LibraryDescription List	N/A
	<b>access_criteria</b>	<b>UCO:: NameValueList</b>	UserID=<string>recognized and valid user name

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
			Password=<string>corresponding valid user password for the submitted UserID  LicenseID=<string>valid License identifier for access to commercial products

**Table 4.3.1.1-2 Geospatial and Imagery Access Services Implementation Detail for Library Manager Interface**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>get_property_names</b>	[return]	<b>UCO::NameList</b>	Valid property names applicable to each manager type. See Tables 4.3.1.1-5 thru 4.3.1.1-12 for specific manager for valid values.
<b>get_property_values</b>	[return]	<b>UCO::NameValuePairList</b>	NameValueList where: name= Valid property name applicable to each manager type. See Tables 4.3.1.1-5 thru 4.3.1.1-12 for specific manager for valid values. value= Valid list of values for property. See Tables 4.3.1.1-5 thru 4.3.1.1-12 for specific manager for valid values.
	<b>desired_properties</b>	<b>UCO::NameList</b>	Valid property names applicable to each manager type. See Tables 4.3.1.1-5 thru 4.3.1.1-12 for specific manager for valid values.
<b>get_libraries</b>	[return]	LibraryList	N/A

**Table 4.3.1.1-3 Geospatial and Imagery Access Services Implementation Detail for RequestManager Interface**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>get_active_requests</b>	[return]	RequestList	N/A
<b>get_default_timeout</b>	[return]	<unsigned long>	As defined in GIAS NL maximum is 24 hours for Query Request Timeouts
<b>set_default_timeout</b>	new_default	<unsigned long>	As defined in GIAS NL maximum is 24 hours for Query Request Timeouts
<b>get_timeout</b>	[return]	<unsigned long>	As defined in GIAS NL maximum is 24

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
			hours for Query Request Timeouts
	<b>request</b>	Request	N/A
<b>set_timeout</b>	<b>request</b>	Request	N/A
	<b>new_lifetime</b>	<unsigned long>	As defined in GIAS NL maximum is 24 hours for Query Request Timeouts
<b>delete_request</b>	<b>request</b>	Request	N/A

**Table 4.3.1.1-4 Geospatial and Imagery Access Services Implementation Detail for AccessManager Interface**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>get_use_modes</b>	[return]	UseModeList	“OrderAccess”; “ProductAccess”
<b>is_available</b>	[return]	<boolean>	TRUE if product is available for the specified use, otherwise FALSE.
	<b>product</b>	UID::Product	N/A
	<b>use_mode</b>	UseMode	“OrderAccess”   “ProductAccess”
<b>query_availability_delay</b>	[return]	<unsigned long>	As defined in GIAS.
	<b>product</b>	UID::Product	N/A
	<b>availability_requirement</b>	<b>Availability Requirement</b>	As defined in GIAS.
	<b>use_mode</b>	UseMode	“OrderAccess”   “ProductAccess”
<b>set_availability</b>	[return]	SetAvailability Request	N/A
	<b>products</b>	UID::ProductList	N/A
	<b>availability_requirement</b>	<b>Availability Requirement</b>	As defined in GIAS.
	<b>use_mode</b>	UseMode	“OrderAccess”   “ProductAccess”

**Table 4.3.1.1-5 Geospatial and Imagery Access Services Implementation Detail for OrderMgr Interface**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>get_number_of_priorities</b>	[return]	<short>	As defined in GIAS, value returned is server specific
<b>get_package_</b>	[return]	NameList	Available package options as

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>specifications</b>			defined in A&D LDM (found in Profile View and data dictionary under ORDER-PACKAGING-SPECIFICATION) in response to NameList of attributes associated with an Order See clarification of format types in Appendix 30, section 30.3: “TARUNC”   “FILESUNC”   “GBSUNC”   “TARZIP”   “FILESZIP”   “GBSZIP”   “TARGZIP”   “FILESGZIP”   “GBSGZIP”   “TARCOMPRESS”   “FILESCOMPRESS”   “GBSCOMPRESS”
<b>validate_order</b>	[return]	<b>ValidationResults</b>  <boolean>	Results table provided in GIAS Table 2-1 <b>valid</b> <boolean>TRUE if order is valid FALSE if order is invalid  <b>warning</b> <boolean>TRUE if there is a warning message with a valid order, otherwise false (“ <b>details</b> ” contains warning message of proposed order) <b>details</b> <string>Contains description of error or warning
	<b>order</b>	UCO::DAG Contains the following nodes: -	The ‘Order’ DAG structure is defined in GIAS and is replicated several times throughout this section. The contents of the “type” and “Desc/Value(s)” columns are provided in Appendix 30, section 30.1.
<b>order</b>	[return]	<b>OrderRequest</b>	N/A
	<b>order</b>	<b>UCO::DAG</b>	The ‘Order’ DAG structure is defined in GIAS and is replicated several times throughout this section. The contents of the “type” and “Desc/Value(s)” columns are provided in Appendix 30, section 30.1.
	<b>properties</b>	<b>UCO::NameValuePair</b>	GeographicDatum=<string>

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
		<b>List</b>	Datum for GeoRegion of the Alteration Spec;default="WGS84"

**Table 4.3.1.1-6 Geospatial and Imagery Access Services Implementation Detail for DataModelMgr Interface**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>get_data_model_date</b>	[return]	<b>UCO::AbsTime</b>	Return date time group in GMT when the data model was last changed
<b>get_data_views</b>	[return]	<b>ViewList</b>	Provided list of views supported by the Library One query attribute of type geospatial per view will be supported by the IAS CC. The IAS CC will support three geospatial types: UCO::Polygon; UCO::rectangle and UCO::point. The Library server establishes the view and one of the three above types for the query attribute. A current CC limitation is that this one query attribute is also the conceptual attribute Footprint, and needs to be aliased to "Footprint". This limitation will be removed in USIGS E2.5
	<b>properties</b>	<b>PropertyList</b>	Not Used
<b>get_attributes</b>	[return]	<b>UCO::NameValue List</b>	NameValueList where: name=<string>valid LDM attribute_name; value=<AttributeInformation> information about the attribute
	<b>data_view</b>	DataView	Valid Logical Data Model view supported by library.
	<b>properties</b>	<b>PropertyList</b>	Not Used
<b>get_queryable_attributes</b>	[return]	<b>UCO::NameValue List</b>	NameValueList where: name=<string>valid LDM attribute_name; value=<AttributeInformation> information about the attribute
	<b>data_view</b>	DataView	Valid Logical Data Model view supported by library.
	<b>properties</b>	<b>PropertyList</b>	Not Used
<b>get_entities</b>	[return]	<b>UCO::DAG</b>	DAG containing entities and relationships for the data view

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
			requested. (TBR-036)
	<b>data_view</b>	DataView >	Valid Logical Data Model view supported by library.
	<b>properties</b>	<b>PropertyList</b>	Not Used
<b>get_entity_attributes</b>	[return]	<b>UCO::NameValueList</b>	NameValueList where: name=<string>attribute_name; value=<AttributeInformation struct> information about the attribute
	<b>entity</b>	<string>	Valid LDM entity.
	<b>properties</b>	<b>PropertyList</b>	Not Used
<b>get_alias_categories</b>	[return]	<b>UCO::NameList</b>	User domain for aliases: “NSPIA”   “IA_User_View”
<b>get_logical_aliases</b>	[return]	<b>UCO::NameNameList</b>	DM_Name =valid attributename from <i>LDM</i> ; A_Name = user domain alias name. Note: A_Name will be blank where alias has not been assigned for user domain requested.
	<b>category</b>	<string>	“NSPIA”   “IA_User_View”
<b>get_logical_attribute_name</b>	[return]	<string>	As defined in GIAS.
	<b>attribute_type</b>	<b>ConceptualAttribute Type</b>	As defined in GIAS.

**Table 4.3.1.1-7 Geospatial and Imagery Access Services Implementation Detail for CreationMgr Interface**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>create</b>	[return]	<b>CreateRequest</b>	N/A
	<b>new_product</b>	<b>UCO::FileLocationList</b>	As defined in UCOS.
	<b>creation_metadata</b>	<b>UCO::DAG</b>	For each DAG structure: “attribute_name”= valid element from <i>A&amp;D Logical Data Model</i> .  NOTE: creation_attributes are not required for file formats with embedded metadata (e.g. NITF, TFRD) or when associated metadata file is used to transfer metadata (see para. 4.4.6.1)
	<b>properties</b>	<b>UCO::NameValueList</b>	GeographicDatum=<string> geographic datum of metadata associated with the

<b>Method</b>	<b>Return/Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
			create call; default=“WGS84”
<b>create_metadata</b>	[return]	<b>CreateMetaData Request</b>	N/A
	<b>creation_metadata</b>	<b>UCO::DAG</b>	For each DAG structure: “attribute_name”= valid element from <i>A&amp;D Logical Data Model</i> .  NOTE: creation_attributes are not required for file formats with embedded metadata (e.g. NITF, TFRD) or when associated metadata file is used to transfer metadata (see para. 4.4.6.1)
	<b>related_files</b>	<b>RelatedFileList</b>	List of files to be FTP'd to server associated with the created product
	<b>properties</b>	<b>UCO::NameValue List</b>	not used

#### **4.3.1.1-7A Geospatial and Imagery Access Services Implementation** **Detail for the UpdateMgr Interface**

<b>Method</b>	<b>Return/Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>update</b>	[return]	UpdateRequest	N/A
	<b>view</b>	ViewName	Valid LDM view
	changes	UCO::UpdateDAGList	As defined in UCOS
	properties	PropertyList	Not used
<b>release_lock</b>	lockedProduct	UID::Product	Product whose lock is to be released.

**Table 4.3.1.1-8 Geospatial and Imagery Access Services Implementation**  
**Detail for CatalogAccessMgr Interface**

<b>Method</b>	<b>Return/Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>submit_query</b>	[return]	<b>SubmitQuery Request</b>	N/A
	<b>data-view</b>	DataView	Valid Logical Data Model view supported by library.
	<b>query</b>	Query	Valid BQS query as defined in Para. 3 of <i>Geospatial and Imagery Access Services (GIAS) Specification</i> .

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
	<b>result_attributes</b>	<b>NameList</b>	attribute name(s) specified by client from those available as defined in the <i>A&amp;D Logical Data Model</i> .
	<b>sort_attributes</b>	<b>SortAttributeList</b>	attribute name(s) specified by client, with a flag denoting whether ascending or descending, from those available as defined in the <i>A&amp;D Logical Data Model</i> .
	<b>properties</b>	<b>UCO::PropertyList</b>	<p><b>BrowseImageReturned</b>&lt;boolean&gt; TRUE=browse image returned FALSE=browse image not returned; default=FALSE</p> <p><b>ThumbnailDirectory</b>&lt;UCO::FileLocation&gt; Directory location for browse images if requested. Note: <b>file_name</b> shall be blank.</p> <p><b>GeographicDatum</b>&lt;string&gt; Datum of the BrowseImage and the geospatial data in the BQS query; default="WGS84"</p> <p><b>Library List</b> &lt;UCO::NameList&gt;List of library names that is a subset of library names submitted on Library::get_mgr. If not specified for use then values are same as the Library::get_mgr.</p>
<b>hit_count</b>	[return]	<b>HitCountRequest</b>	N/A
	<b>data_view</b>	DataView	Valid Logical Data Model view supported by library.
	<b>query</b>	Query	Valid query as defined in Para. 3 of <i>Geospatial and Imagery Access Services (GIAS) Specification</i>
	<b>properties</b>	<b>UCO::PropertyList</b>	<p><b>GeographicDatum</b>&lt;string&gt; Datum of the geospatial data in the BQS query; default= "WGS84"</p> <p><b>Library List</b>&lt;UCO::NameList&gt; List of library names that is a subset of library names submitted on Library::get_mgr. If not specified for use then values are same as the Library::get_mgr.</p>

**Table 4.3.1.1-9 Geospatial and Imagery Access Services Implementation Detail for ProductAccessMgr Interface**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>get_parameters</b>	[return]	<b>GetParametersRequest</b>	N/A
	<b>product</b>	UID::Product	Product for which data is being requested
	<b>desired_parameters</b>	<b>UCO::NameList</b>	<p>Attribute name(s) from <i>A&amp;D Logical Data Model</i>.          “ALL” will return all attributes associated with the product.          “ORDER” will return attributes associated with product ordering for DATASET-INFORMATION-SYSTEM as described in the A&amp;D LDM. This includes:</p> <ul style="list-style-type: none"> <li>1) Available Alteration Options;</li> <li>2) Available Media Types;; and</li> <li>3) Available Tailoring Options as defined in the A&amp;D LDM.</li> </ul> <p><i>(TBR-040) IAW para 4.4.4 of GIAS and until segments discover the entity attributes they will be fully defined as:</i></p> <p>NL uses naming convention entity.attribute for A&amp;D LDM attribute names.</p>
	<b>lock</b>	<boolean>	TRUE if product is to be locked for editing, otherwise FALSE
	<b>properties</b>	<b>PropertyList</b>	Not Used
<b>get_related_file_types</b>	[return]	<b>RelatedFileTypeList</b>	List of file types available for this product
	<b>product</b>	UID::Product	Product for which available file types is being requested
<b>get_related_files</b>	[return]	<b>RelatedFilesRequest</b>	N/A
	<b>products</b>	UID::ProductList	List of products for which the related files are to be retrieved
	<b>location</b>	UCO::FileLocation	Location where the related files are to be put; FileName will be blank
		<b>RelatedFileType</b>	The type of related file to be retrieved
	<b>property_list</b>	PropertyList	Not Used
<b>get_browse_image</b>	[return]	<b>GetBrowseImageRequest</b>	N/A
	<b>products</b>	UID::ProductList	List of products for which the browse images are to be retrieved
	<b>location</b>	<b>UCO::FileLocation</b>	Location where the browse images are to be put; <b>FileName</b> will be blank.

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
	<b>type</b>	<b>BrowseImageType</b>	As defined in GIAS.
	property_list	PropertyList	Not Used

**Table 4.3.1.1-10 Geospatial and Imagery Access Services Implementation Detail for IngestMgr Interface)**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>bulk_pull</b>	[return]	<b>IngestRequest</b>	N/A
	<b>location</b>	<b>UCO::FileLocation</b>	As defined in UCOS.
	<b>property_list</b>	<b>UCO::PropertyList</b>	Not Used.
<b>bulk_push</b>	[return]	<b>IngestRequest</b>	N/A
	<b>data_view</b>	DataView	Valid Logical Data Model view supported by library.
	<b>query</b>	Query	Valid BQS query as defined in Para. 3 of <i>Geospatial and Imagery Access Services (GIAS) Specification</i> .
	<b>location</b>	<b>UCO::FileLocation</b>	As defined in UCOS.
	<b>property_list</b>	<b>UCO::PropertyList</b>	Not Used

**Table 4.3.1.1-11 Geospatial and Imagery Access Services Implementation Detail for StandingQueryMgr Interface)**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>get_event_descriptions</b>	[return]	<b>GIAS::EventList</b>	To be provided by servers and may include: Event_Name= “FOREVER” “ON_PURGE” “EVERYDAY” “ON_INGEST” “PRODUCT_ONLINE” “PRODUCT_OFFLINE” “PRODUCT_NEARLINE”
<b>Submit_standing_query</b>	[return]	<b>SubmitStandingQueryRequest</b>	N/A
	<b>data_view</b>	DataView	Valid A&D Logical Data Model view supported by library.
	<b>query</b>	Query	Valid BQS query as defined in Para. 3

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
			of <i>Geospatial and Imagery Access Services (GIAS) Specification</i> .
	<b>result_attributes</b>	<b>NameList</b>	Attribute name(s) specified by client from those available as defined in the A&D Logical Data Model.
	<b>sort_attributes</b>	<b>SortAttributeList</b>	Attribute name(s) specified by client with a flag denoting whether ascending or descending from those available as defined in the A&D Logical Data Model
	<b>properties</b>	<b>UCO::NameValueList</b>	<p><b>BrowseImageReturned</b>&lt;boolean&gt; TRUE=browse image returned FALSE=browse image not returned; default=FALSE</p> <p><b>ThumbnailDirectory</b>&lt;UCO::FileLocation&gt; Directory location for browse images if requested. Note: <b>file_name</b> shall be blank.</p> <p>GeographicDatum &lt;string&gt; Datum of the browse image and the geospatial data in the BQS query; default= "WGS84"</p>

**Table 4.3.1.1-12 Geospatial and Imagery Access Services Implementation Detail for VideoAccessMgr Interface (TBD-005)**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
TBD			

**Table 4.3.1.1-13 Geospatial and Imagery Access Services Implementation Detail for Request Interface**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>get_request_</b>		<b>RequestDescr</b>	

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>description</b>		<b>option</b>	<p><b>user_info</b> &lt;string&gt; Supplied by client [Default is empty]</p> <p><b>request_type</b> &lt;string&gt; “OrderAccess”   “CreationAccess”   “CatalogAccess”   “IngestAccess”   “ProductAccess”  </p> <p><b>request_info</b> &lt;string&gt; Supplied by server [Default is empty]</p> <p><b>request_details</b> &lt;UCO::NameValueList&gt; See Tables 4.3.1.1-15-16 and 4.3.1.1-20-29 for specific request type</p>
<b>set_user_info</b>	<b>message</b>	<string>	Supplied by client [Default is empty]
<b>get_status</b>	[return]	<b>UCO::Status</b>	<p><b>completion_state</b> &lt;UCO::State&gt; As defined in UCOS.</p> <p><b>status_message</b> &lt;string&gt; Human-readable explanatory message</p>
<b>get_remaining_delay</b>	[return]	DelayEstimate	As defined in GIAS.
<b>cancel</b>	N/A	N/A	N/A
<b>register_callback</b>	<b>callback</b>	CB::Callback	N/A
<b>free_callback</b>	<b>callback</b>	CB::Callback	N/A
<b>get_request_manager</b>	[return]	<b>RequestManager</b>	N/A

**Table 4.3.1.1-14 Geospatial and Imagery Access Services Implementation Detail for OrderRequest Interface**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>complete</b>	[return]	<b>UCO::State</b>	As defined in UCOS.
<b>get_request_description</b>	[return]	<b>RequestDescription</b>	<p><b>user_info</b> &lt;string&gt; Supplied by client [Default is empty]</p> <p><b>request_type</b> &lt;string&gt; “OrderAccess”</p> <p><b>request_info</b> &lt;string&gt; Supplied by server</p>

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
			<p>[Default is empty]</p> <p><b>request_details</b>&lt;UCO::NameValueList&gt; order=&lt;UCO::DAG&gt; DAG containing order <i>GeographicDatum&lt;string&gt;</i></p> <p><i>OrderSize=&lt;double&gt;</i>Size (in MB/megabytes) of product(s) requested in order.</p> <p><i>TimeSubmitted= &lt;UCO::AbsTime&gt;</i></p>

**Table 4.3.1.1-15 Geospatial and Imagery Access Services Implementation Detail for CreateRequest Interface**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>complete</b>	[return]	<b>UCO::State</b>	As defined in UCOS.
	<b>new_product</b>	UID::Product	For products that consist of multiple products this is the aggregated product object
<b>get_request_description</b>	[return]	<b>RequestDescription</b>	<p><b>user_info</b> &lt;string&gt;Supplied by client [Default is empty]</p> <p><b>request_type</b> &lt;string&gt; “CreationAccess”</p> <p><b>request_info</b> &lt;string&gt;Supplied by server [Default is empty]</p> <p><b>request_details</b>&lt;UCO::NameValueList&gt;  <i>new_product= &lt;UCO::FileLocationList&gt;</i>  <i>creation_metadata &lt;UCO::DAG&gt;</i>  <i>product_RRDS&lt;string&gt;</i>  <i>GeographicDatum&lt;string&gt;</i></p>

**Table 4.3.1.1-16 Geospatial and Imagery Access Services Implementation Detail for CreateMetaDataRequest Interface**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>complete</b>	[return]	<b>UCO::State</b>	As defined in UCOS.

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
	<b>new_product</b>	UID::Product	N/A
<b>get_request_description</b>	[return]	<b>RequestDescription</b>	<p><b>user_info</b> &lt;string&gt; Supplied by client [Default is empty]</p> <p><b>request_type</b> &lt;string&gt; “CreationAccess”</p> <p><b>request_info</b> &lt;string&gt; Supplied by server [Default is empty]</p> <p><b>request_details</b> &lt;UCO::NameValuePairList&gt;</p> <p><b>view_name</b> &lt;ViewName&gt;</p> <p><b>creation_metadata</b> &lt;UCO::DAG&gt;</p>

**Table 4.3.1.1-17 Geospatial and Imagery Access Services Implementation Detail for SubmitStandingOrderRequest Interface**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>pause</b>	[return]		
<b>restart</b>	[return]		
<b>complete</b>	[return]	<b>UCO::State</b>	As defined in UCOS.
<b>get_request_description</b>	<b>RequestDescription</b> <b>user_info</b> <b>request_type</b> <b>request_info</b> <b>request_details</b>	<string> <string> <string> <b>UCO::NameValuePairList</b>	Supplied by client [Default is empty] “StandingOrderAccess” Supplied by server [Default is empty] Order= DAG containing order OrderSize=Size (in MB/megabytes) of product(s) requested in order. <double>

**Table 4.3.1.1-18 Geospatial and Imagery Access Services Implementation Detail for StandingOrderMgr Interface**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>get_event_descriptions</b>	[return]	<b>GIAS::EventList</b>	To be defined but not limited to values below provided by servers and may include: Event_Name= "FOREVER" "ON_PURGE" "EVERYDAY" "ON_INGEST" "PRODUCT_ONLINE" "PRODUCT_OFFLINE" "PRODUCT_NEARLINE"
<b>submit_standing_order</b>	<b>SubmitStandingOrderRequest</b>	<object>	N/A
	<b>view_name</b>	<string>	Valid Logical Data Model view supported by library.
	<b>query</b>	Query	Valid query as defined in Para. 3 of <i>Geospatial and Imagery Access Services (GIAS) Specification</i> .
	<b>Result_attributes</b>	<b>NameList</b>	Full attribute name(s) specified by client from those available as defined in the A&D Logical Data Model.
	<b>Sort_attributes</b>	<b>SortAttributeList</b> <b>Sequence&lt;string&gt;</b> <b>Attribute_name</b> <b>Sort_polarity</b>	Attribute_name per A&D LDM definition of sortable attributes. Polarity as defined in GIAS.
	<b>Lifespan</b>	<b>QueryLifeSpan</b>	As defined in GIAS section 2.2.3.5
	<b>order</b>	<b>UCO::DAG</b>	The 'Order' DAG structure is defined in GIAS and is replicated several times throughout this section. The contents of the "type" and "Desc/Value(s)" columns are provided in Appendix 30, section 30.1.
	<b>properties</b> BrowseImageReturned	<b>UCO::NameValueList</b> <Boolean>	TRUE=browse image returned FALSE=browse image not returned [default]
	ThumbnailDirectory	<b>UCO::FileLocation</b>	Directory location for browse images if requested. Note: <b>file_name</b> shall be blank.
	GeographicDatum	<string>	"WGS84" [default] for GeographicDatum <string> of the browse image

**Table 4.3.1.1-19 Geospatial and Imagery Access Services Implementation Detail for SubmitQueryRequest Interface**

Method	Return/ Parameter	Type	Desc/Value(s)
<b>set_number_of_hits</b>	hits	<unsigned long>	As defined in GIAS.
<b>complete</b>	[return]	<b>UCO::State</b>	As defined in UCOS.
	<b>results</b>	<b>UCO::DAGList</b>	DAGs as defined in GIAS of type QueryResult. One node shall be a product reference. Nodenames shall be full attribute names from <i>A&amp;D Logical Data Model</i> .
<b>get_request_description</b>	[default]	<b>RequestDescription</b>	<p><b>user_info&lt;string&gt;</b> Supplied by client [Default is empty]</p> <p><b>request_type&lt;string&gt;</b> “CatalogAccess”</p> <p><b>request_info &lt;string&gt;</b> Supplied by server [Default is empty]</p> <p><b>request_details&lt;UCO::NameValueList&gt;</b>  <b>data_view&lt;DataView&gt;</b>  <b>query=&lt;Query&gt;</b> query string  <b>result_attributes&lt;UCO::NameList&gt;</b>  <b>sort_attributes&lt;SortAttributeList&gt;</b>  <b>ThumbnailDirectory&lt;UCO::FileLocation&gt;</b>  <b>GeographicDatum&lt;string&gt;</b></p>

**Table 4.3.1.1-20 Geospatial and Imagery Access Services Implementation Detail for SubmitStandingQueryRequest Interface**

Method	Return/ Parameter	Type	Desc/Value(s)
<b>set_number_of_hits</b>	<b>hits</b>	<unsigned long>	As defined in GIAS.
<b>get_number_of_hits</b>	[return]	<long>	As defined in GIAS.
<b>get_number_of_hits_in_interval</b>	[return]	<long>	As defined in GIAS.
<b>get_number_of_intervals</b>	[return]	<long>	As defined in GIAS.

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>clear_all</b>	N/A	<b>N/A</b>	As defined in GIAS.
<b>clear_intervals</b>	num_intervals	<b>&lt;long&gt;</b>	As defined in GIAS.
<b>clear_before</b>	Relative_time	<b>UCO::Time</b>	As defined in GIAS.
<b>pause</b>	[return]		As defined in GIAS.
<b>restart</b>	[return]		As defined in GIAS.
<b>get_time_last_executed</b>	[return]	<b>UCO::AbsTime</b>	Date time group in GMT when query request was last executed; if not yet executed, all values set to 0
<b>get_time_next_execution</b>	[return]	<b>UCO::AbsTime</b>	Date and time in GMT when query is expected to be executed next if known; if unknown, all values set to 0
<b>complete</b>	[return]	<b>UCO::State</b>	As defined in UCOS.
	<b>results</b>	<b>UCO::DAGList</b>	DAGs as defined in GIAS of type QueryResult. One node shall be a product reference. Nodenames shall be full attribute names from <i>A&amp;D Logical Data Model</i> . If browse image was requested to be returned, node GIAS_Browse_Image shall contain <b>UCO::FileLocation</b> .
<b>get_request_description</b>	[return]	<b>RequestDescription</b>	<p><b>user_info</b> &lt;string&gt; Supplied by client [Default is empty]</p> <p><b>request_type</b> &lt;string&gt; “CatalogAccess”</p> <p><b>request_info</b>&lt;string&gt; Supplied by server [Default is empty]</p> <p><b>request_details</b>&lt;UCO::NameValueList&gt;  <i>data_view</i>&lt;DataView&gt;  <i>query</i>=&lt;Query&gt; query string  <i>result_attributes</i>&lt;UCO::NameList&gt;  <i>sort_attributes</i>&lt;SortAttributeList&gt;  <i>lifespan</i>&lt;QueryLifeSpan&gt;  <i>ThumbnailDirectory</i>&lt;UCO::FileLocation&gt;  <i>GeographicDatum</i>&lt;string&gt;</p>

**Table 4.3.1.1-21 Geospatial and Imagery Access Services Implementation Detail for SetAvailabilityRequest Interface**

Method	Return/ Parameter	Type	Desc/Value(s)
<b>complete</b>	[return]	<b>UCO::State</b>	As defined in UCOS.
<b>get_request_description</b>	[return]	<b>RequestDescription</b>	<p><b>user_info&lt;string&gt;</b> Supplied by client [Default is empty]</p> <p><b>request_type&lt;string&gt;</b> “ProductAccess”</p> <p><b>request_info&lt;string&gt;</b> Supplied by server [Default is empty]</p> <p><b>request_details&lt;UCO::NameValuePairList&gt;</b> <i>product=&lt;Product&gt;</i> product object reference <i>availability_requirement&lt;AvailabilityRequirement&gt;</i> <i>use_mode= &lt;UseMode&gt;</i></p>

**Table 4.3.1.1-22 Geospatial and Imagery Access Services Implementation Detail for HitCountRequest Interface**

Method	Return/ Parameter	Type	Desc/Value(s)
<b>Complete</b>	[return]	<b>UCO::State</b>	As defined in UCOS.
<b>get_request_description</b>	[return]	<b>RequestDescription</b>	<p><b>user_info&lt;string&gt;</b> Supplied by client [Default is empty]</p> <p><b>request_type&lt;string&gt;</b> “CatalogAccess”</p> <p><b>request_info &lt;string&gt;</b>Supplied by server [Default is empty]</p> <p><b>request_details&lt;UCO::NameValuePairList&gt;</b> <i>data_view&lt;DataView&gt;</i> <i>query=&lt;Query&gt;</i> query string <i>GeographicDatum&lt;string&gt;</i></p>

**Table 4.3.1.1-23 Geospatial and Imagery Access Services Implementation Detail for GetParametersRequest Interface**

Method	Return/Parameter	Type	Desc/Value(s)
<b>complete</b>	[return]	<b>UCO::State</b>	As defined in UCOS.
	<b>parameters</b>	<b>UCO::DAG</b>	<p>DAGs as defined in GIAS of type QueryResult. One node shall be a product reference. Node names shall be a subset derived from the order view of <i>A&amp;D Logical Data Model</i>.</p> <p>Attribute name(s) from <i>A&amp;D Logical Data Model</i>. “ALL” will return all attributes associated with the product.</p> <p>“ORDER” will return attributes associated with product ordering for DATASET-INFORMATION-SYSTEM as described in the A&amp;D LDM. This includes: 1) Available Alteration Options; 2) Available Media Types; and 3) Available Tailoring Options as defined in the A&amp;D LDM.</p>
<b>get-request-description</b>	[return]	RequestDescription	<p><b>user_info</b> &lt;string&gt; Supplied by client [Default is empty]</p> <p><b>request_type</b>&lt;string&gt; “ProductAccess”</p> <p><b>request_info</b>&lt;string&gt; Supplied by server [Default is empty]</p> <p><b>request_details</b> &lt;UCO::NameValueList&gt; <i>product=&lt;UID::ProductList&gt;</i>Product object reference</p> <p><b>desired_parameters</b>&lt;UCO::NameList&gt;</p>

**Table 4.3.1.1-24 Geospatial and Imagery Access Services Implementation Detail for IngestRequest Interface**

Method	Return/Parameter	Type	Desc/Value(s)
<b>complete</b>	[return]	<b>UCO::State</b>	As defined in UCOS.
<b>get_request_description</b>		<b>RequestDescription</b>	<p><b>user_info</b> &lt;string&gt; Supplied by client [Default is empty]</p> <p><b>request_type</b> &lt;string&gt; “IngestAccess”</p> <p><b>request_info</b> &lt;string&gt; Supplied by</p>

Method	Return/Parameter	Type	Desc/Value(s)
			<p>server [Default is empty]</p> <p><b>request_details</b>  <i>&lt;UCO::NameValueList&gt;</i> If the Request was created by a bulk_pull:  <i>locationFile=&lt;UCO::FileLocation&gt;</i></p> <p>If the Request was created by a bulk_push:  <i>data_view&lt;DataView&gt;</i>  <i>query&lt;Query&gt;</i>  <i>location&lt;UCO::FileLocation&gt;</i></p>

**Table 4.3.1.1-25 Geospatial and Imagery Access Services ImplementationDetail for the UpdateRequest Interface**

Method	Return/Parameter	Type	Desc/Value(s)
<b>complete</b>	[return]	<b>UCO::State</b>	As defined in UCOS
<b>get_request_description</b>	[return]	<b>RequestDescription</b>	<p><b>user_info</b> &lt;string&gt; Supplied by client [Default is empty]</p> <p><b>request_type</b> &lt;string&gt; “Update”</p> <p><b>request_info</b> &lt;string&gt; Supplied by server. [Default is empty]</p> <p><b>request_details</b> &lt;UCO::NameValueList&gt;  <i>view_name&lt;ViewName&gt;</i>  <i>changes&lt;UCO::UpdateDAGList&gt;</i></p>

**Table 4.3.1.1-26 Geospatial and Imagery Access Services Implementation Detail for Callback Interface**

Method	Return/Parameter	Type	Desc/Value(s)
<b>callback_notify</b>	[return]	<b>RequestDescription</b>	<p><b>user_&lt;string&gt;</b> Supplied by client [Default is empty]</p> <p><b>request_type &lt;string&gt;</b></p>

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
			<p>“Callback”</p> <p><b>request_info</b> &lt;string&gt; Request identifier</p> <p><b>request_details</b> &lt;UCO::NameValuePairList&gt;</p> <p>-</p>
<b>release</b>	N/A	N/A	N/A

**Table 4.3.1.1-27 Geospatial and Imagery Access Services Implementation Detail for GetBrowseImageRequest Interface**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>complete</b>	[return]	<b>UCO::State</b>	As defined in UCOS.
	<b>location</b>	<b>UCO::NameList</b>	As defined in UCOS. Where Name List=File name
<b>get_request_description</b>	[return]	<b>RequestDescription</b>	<p><b>user_info</b>&lt;string&gt; Supplied by client [Default is empty]</p> <p><b>request_type</b> &lt;string&gt; “ProductAccess”</p> <p><b>request_info</b> &lt;string&gt;Supplied by server [Default is empty]</p> <p><b>request_details</b>&lt;UCO::NameValuePairList&gt;</p> <p><i>product=s&lt;UID::ProductList&gt;</i> Product object reference;</p> <p><i>location&lt;UCO::FileLocationsList&gt;</i></p> <p><i>type= &lt;BrowseImageType&gt;</i></p>

**Table 4.3.1.1-28 Geospatial and Imagery Access Services Implementation Detail for GetRelatedFiles Request:Request Interface**

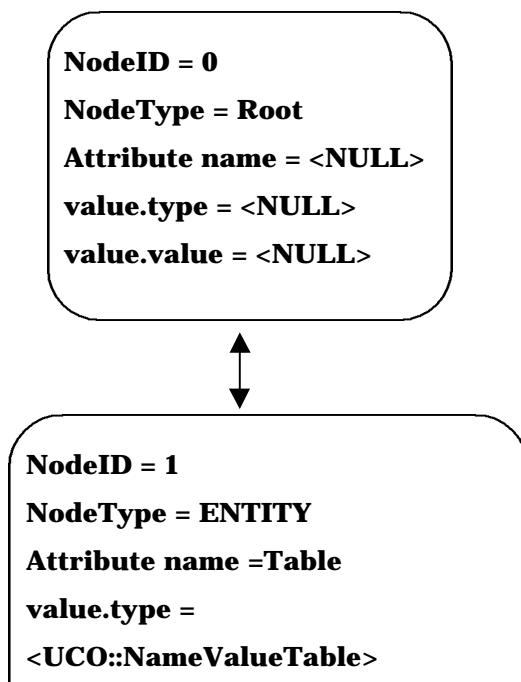
<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
<b>complete</b>	[return]	<b>UCO::State</b>	As defined in UCOS.
	<b>locations</b>	<b>UCO::NameList</b>	As defined in UCOS.
<b>get_request_description</b>	[return]	<b>RequestDescription</b>	<p><b>user_info</b>&lt;string&gt; Supplied by client [Default is empty]</p> <p><b>request_type</b> &lt;string&gt; “ProductAccess”</p>

Method	Return/ Parameter	Type	Desc/Value(s)
			<b>request_info</b> <string>Supplied by server [Default is empty] <b>request_details</b> <UCO::NameValueList> <i>products</i> <UID::ProductList> <i>location</i> <UCO::FileLocation> <i>type</i> < <b>RelatedFileType</b> > (similar to <b>BrowseImageType</b> ) "OVERVIEWIMAGE" "THUMBNAILIMAGE" "CHIPPABLEIMAGE"

#### 4.3.1.2 Tabular Results DAG (TBD)

The following diagram depicts how data from the DAG may be expressed in a table structure that is contained within a DAG, providing an "abbreviated DAG".

Currently, the MDL will be the only library that uses this form of a DAG.



***DAG containing results in the form of a table*****4.3.2 Information Exploitation Services****4.3.2.1 Geospatial and Imagery Exploitation Services**

Systems/Segments providing Geospatial and Imagery Exploitation Services and/or requiring access to these services shall conform to the Application Program Interfaces (API) as defined in the Geospatial and Imagery Exploitation Services (GIXS) Specification, Version 1.0, per Table 4.3.2-1. Table 4.3.2-1 indicates whether the system is a bearer (B) or presenter of the interface, the audience (A) or caller of the interface, or both. Effectivities are indicated as appropriate.

Interfaces in Table 4.3.2-1 shall be implemented by each specified USIGS System in accordance with the implementation details specified in paragraph 4.3.2.1.1.

**Table 4.3.2-1 - USIGS Implementation of Geospatial and Imagery Exploitation Services**

	IEC		IESS EAC		NES		MINT							
	B	A	B	A	B	A	B	A	B	A	B	A	B	A
<b>Data Container Objects</b>														
<b>interface RenderedImage</b>														
<b>get_property</b>	2.0	2.0												
<b>get_property_names</b>	2.0	2.0												
<b>get_width</b>	2.0	2.0												
<b>get_height</b>	2.0	2.0												
<b>get_min_x_coord</b>	2.0	2.0												
<b>get_max_x_coord</b>	2.0	2.0												
<b>get_min_y_coord</b>	2.0	2.0												
<b>get_max_y_coord</b>	2.0	2.0												
<b>tiles_across</b>	2.0	2.0												
<b>tiles_down</b>	2.0	2.0												
<b>get_min_tile_x</b>	2.0	2.0												
<b>get_max_tile_x</b>	2.0	2.0												
<b>get_min_tile_y</b>	2.0	2.0												
<b>get_max_tile_y</b>	2.0	2.0												
<b>get_tile_width</b>	2.0	2.0												
<b>get_tile_height</b>	2.0	2.0												
<b>get_tile_grid_x_offset</b>	2.0	2.0												

	<b>IEC</b>		<b>IESS EAC</b>		<b>NES</b>		<b>MINT</b>							
	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>
<b>get_tile_grid_y_offset</b>	2.0	2.0												
<b>get_tile</b>	2.0	2.0												
<b>get_data</b>														
<b>get_rectangle</b>	2.0	2.0												
<b>destroy</b>	2.0	2.0												
<b>interface</b>														
<b>RenderedImageFactory</b>														
<b>destroy</b>	2.0	2.0												
<b>create_from_file</b>	2.0	2.0												
<b>Exploitation Framework</b>														
<b>Service interface</b>														
<b>FrameworkManager</b>														
<b>get_user_framework</b>	2.0			2.0		3.0								
<b>register_callback</b>	2.0			2.0		3.0								
<b>free_callback</b>	2.0			2.0		3.0								
<b>create_user_framework</b>	2.0	2.0												

	<b>IEC</b>		<b>IESS EAC</b>		<b>NES</b>		<b>MINT</b>							
	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>
<b>delete_user_framework</b>	2.0	2.0												
<b>Exploitation Framework</b>														
<b>Service interface Framework</b>														
<b>start_exploitation</b>	2.0				2.0			3.0						
<b>add_info</b>	2.0				2.0									
<b>display</b>	2.0				2.0			3.0						
<b>interface MgrCallback</b>														
<b>framework_released</b>		2.0	2.0			3.0	3.0							
<b>notify</b>		2.0	2.0			3.0								
<b>interface EFCallback</b>														
<b>notify</b>		2.0	2.0			3.0								
<b>Exploitation Buffer Service</b>														
<b>interface BufferMgr</b>														
<b>request_tilable</b>	2.0				2.0		3.0							

	<b>IEC</b>		<b>IESS EAC</b>		<b>NES</b>		<b>MINT</b>							
	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>
<b>request_untilable</b>	2.0			2.0		3.0								
<b>is_tilable</b>	2.0			2.0		3.0								
<b>get_purge_time</b>	2.0			2.0		3.0								
<b>set_purge_time</b>	2.0			2.0		3.0								
<b>register_callback</b>	2.0			2.0			3.0							
<b>free_callback</b>	2.0			2.0		3.0								
<b>interface XBSCallback</b>														
<b>product_ingested</b>		2.0	2.0			3.0								
<b>product_purged</b>		2.0	2.0		3.0									

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B = Bearer, A = Audience, IEC = Integrated Exploitation Capability, IESS EAC = IESS Enhanced Analyst Client,  
NES = National Exploitation System, MINT = Multi-Source Intelligence Toolkit

4.3.2.1.1. Geospatial and Imagery Exploitation Services Implementation Details  
 Systems/segment shall implement the Geospatial and Imagery Exploitation Services as specified in the Geospatial and Imagery Exploitation Services Specification (GIXS), Ver. 1.0 in accordance with the information specified in Tables 4.3.2.1.1-1 through 4.3.2-8.

**Table 4.3.2.1.1-1 Geospatial and Imagery Exploitation Services Implementation Detail for Data Container Objects Interface RenderedImage**

Method	Return/Parameter	Type	Desc/Value(s)
get_property	[return]	<any>	As defined in GIXS and E&P LDM
	name	<string>	As defined in GIXS and E&P LDM
get_property_names	[return]	UCO::NameList	ESD as defined in E&P LDM and IEC & MINT will support following ESD properties: IMAGE_DATASETxEXPLOITATION_SUPPORT_DATA_TEXT IMAGE_DATASETxEXPLOITATION_SUPPORT_DATA_TEXT_ASCII IMAGE_DATASETxEXPLOITATION_SUPPORT_DATA_TEXT_EBCDIC where : DATA_TEXT = Raw, DATA_TEXT_ASCII =ASCII, and DATA_TEXT_EBCDIC =EBCDIC
get_width	[return]	<unsigned long>	As defined in GIXS
get_height	[return]	<unsigned long>	As defined in GIXS
get_min_x_coord	[return]	< long>	As defined in GIXS
get_max_x_coord	[return]	< long>	As defined in GIXS
get_min_y_coord	[return]	< long>	As defined in GIXS
get_max_y_coord	[return]	< long>	As defined in GIXS
tiles_across	[return]	<unsigned long>	As defined in GIXS
tiles_down	[return]	<unsigned long>	As defined in GIXS
get_min_tile_x	[return]	< long>	As defined in GIXS
get_max_tile_x	[return]	< long>	As defined in GIXS
get_min_tile_y	[return]	< long>	As defined in GIXS
get_max_tile_y	[return]	< long>	As defined in GIXS
get_tile_width	[return]	<unsigned long>	As defined in GIXS
get_tile_height	[return]	<unsigned long>	As defined in GIXS
get_tile_grid_x_offset	[return]	< long>	As defined in GIXS
get_tile_grid_y_offset	[return]	< long>	As defined in GIXS
get_tile	[return]	Raster	As defined in GIXS

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
	x	<long>	Row coordinate (1-based) of image tile to be retrieved
	y	<long>	Column coordinate (1-based) of image tile to be retrieved
get_data	[return]	Raster	As defined in GIXS
get_rectangle	[return]	Raster	As defined in GIXS
	rect	UCO::Rectangle	Upper left and lower right coordinates in pixel units of a rectangular region inside the imagery data to be retrieved.
destroy			*Note: this method is to destroy the rendered image itself, not the factory

**Table 4.3.2.1.1-2 Geospatial and Imagery Exploitation Services Implementation Detail for Interface RenderedImage Factory**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
create_from_file	[return]	RenderedImage	As defined in GIXS
	file	UCO::FileLocation	FileLocation in the IEC buffer where the imagery data is stored and can be opened for tiling. Acceptable file formats: TFRD NITF 2.0 TIFF FF JPEG
	hints	UCO::NameValuePairList	Name: RasterDeliveryMode Value: NativeCompressed (Can not be used with other hints). Name: Remap Value: Shift11to8 (If imagery is requested in 1 byte pixels by the ELT) Name: Scale Value: AnamorphicCorrection (Anamorphic correction is only done if the imagery is assymetric.).
destroy	img	Rendered Image	As defined in GIXS *Note: this method is to destroy the rendered image itself, not the factory

**Table 4.3.2.1.1-3 Geospatial and Imagery Exploitation Services Implementation Detail for Exploitation Framework Service: Interface FrameworkManager**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
get_user_framework	[return] id	Framework UserID	As defined in GIXS
register_callback	cb	MgrCallback	As defined in GIXS
free_callback	cb	MgrCallback	As defined in GIXS
create_user_framework (IEC internal use only)	[return]  id	Framework UserID	As defined in GIXS
delete_user_framework (IEC internal use only)	fw	Framework	As defined in GIXS}

**Table 4.3.2.1.1-4 Geospatial and Imagery Exploitation Services Implementation Detail for Exploitation Framework Service Interface Framework**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
start_exploitation	packet  cb	ExploitationPacket UCO::DAG EFCallback	DAG details are defined in E&P LDM As defined in GIXS
add_info	packet	ExploitationPacket UCO::DAG	DAG details are defined in E&P LDM
display	cmds	DisplayMessageList <sequence>	As defined in GIXS

**Table 4.3.2.1.1-5 Geospatial and Imagery Exploitation Services Implementation Detail for Exploitation Framework Services: Interface MgrCallback**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
notify	state	ManagerState	As defined in GIXS
framework_released	id	UserID	As defined in GIXS

**Table 4.3.2.1.1-6 Geospatial and Imagery Exploitation Services  
Implementation Detail for Interface EFCallback**

Method	Return/ Parameter	Type	Desc/Value(s)
notify	state	SessionState	As defined in GIXS

**Table 4.3.2.1.1-7 Geospatial and Imagery Exploitation Services  
Implementation Detail for Exploitation Buffer Service Interface BufferMgr**

Method	Return/ Parameter	Type	Desc/Value(s)
request_tilable	prod	UID::Product	Product Ref for the image to be ingested
	product_id	<string>	Image_Id for the image to be ingested
request_untilable	prod	UID::Product	Product Ref for the image to be removed
	product_id	<string>	Image_Id for the image to be removed
is_tilable	[return]	<boolean>	TRUE=Image is tilable (available) FALSE=Image is not tilable (not available)
	prod	UID::Product	Product Ref of the image to be checked
	product_id	<string>	Image_Id for the image to be checked
get_purge_time	[return]	UCO::AbsTime	Return Date Time Group in Greenwich Mean Time (GMT) to purge Buffer
	prod	UID::Product	ProductRef of the image for which purge time is requested
	product_id	<string>	Image_Id of the image for which purge time is requested
set_purge_time	prod	UID::Product	Product for which purge time is set
	product_id	<string>	Image_Id for the image for which purge time is to be set
	length	UCO::AbsTime	Date Time Group in Greenwich Mean Time (GMT) when image is to be purged
register_callback	cb	XBSCallback	As defined in GIXS

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
free_callback	cb	XBSCallback	As defined in GIXS

**Table 4.3.2.1.1-8 Geospatial and Imagery Exploitation Services  
Implementation Detail for Interface XBSCallback)**

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
product_ingested	prod_desc	ProductDescription	<UID::Product> Product ref of ingested product product_id<string> Image Id for the ingested product prod_type<ProductType> ProductType is a string that indicates the type of the product – REFERENCE_IMAGE, PRIMARY_IMAGE, OTHER
	successFlag	<boolean>	TRUE if image successfully ingested FALSE if ingest fails
	details	<string>	Contains text name and details of exception that caused ingest failure(*note)
product_purged	prod_desc	ProductDescription	prod<UID::Product> Product ref of purged product product_id<string> Image Id for the purged product prod_type<ProductType> ProductType is a string that indicates the type of the product – REFERENCE_IMAGE, PRIMARY_IMAGE, OTHER
	successFlag	<boolean>	TRUE if image successfully purged FALSE if purge fails
	details	<string>	Contains text name and details of exception that caused purge failure (*note)
notify	State	BufferMgrState	As defined in GIXS

\*Note: When purge/ingest not successful, the details will be set to the exception name, and the exception details - text string to look like:  
"ExceptionName:ExceptionDetails" where ExceptionName is a textual representation of the exception that was thrown/caught, and ExceptionDetails is the text inside the exception (Exception\_info)

## **4.4 USIGS Data Formats**

USIGS Systems/Segments shall exchange data in accordance with the specifications in this paragraph. Specific data format requirements for each System/Segment are documented in the applicable Requirements Document for that System/Segment. As USIGS migration proceeds data interchange formats will conform to the DoD JTA (data interchange is covered in sections 2.2 and 2.4) and the UTA as specified herein.

### **4.4.1 Raster Products**

USIGS format conversion services shall convert imagery and other raster products in the USIGS standard file formats and compressions per Table 4.4.1-1.

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<b>TO:</b>	TFRD 1.3	TFRD 2.3	TFRD 4.3	NITF Unc	NITF 12-bit JPEG Lossy (C3)	NITF 12-bit JPEG Lossles s (C5)	NITF 8-bit JPEG	NITF VQ	NITF IM4	RPF	TIF F 6.0	GIF	Post- scrip t	ADRG	CADRG	CIB	Sun Raste r
TFRD 1.3			5(2.0)	1,2	1,2		1,2										
TFRD 2.3			5(2.0)	1,2, 5(1.1)	1,2		1,2										
TFRD 4.3				1,2, 5(1.1)	1,2	1,2	1,2										
NITF Unc					1,2	1,2	1,2				1,2						1,2
NITF 12-bit JPEG Lossy (C3)					1,2			1,2			1,2						1,2
NITF 12-bit JPEG Lossles s (C5)				1,2	1,2		1,2				1,2						1,2

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<b>TO:</b>	TFRD 1.3	TFRD 2.3	TFRD 4.3	NITF Unc	NITF 12-bit JPEG	NITF 12-bit JPEG	NITF 8-bit JPEG	NITF VQ	NITF IM4	RPF	TIF F 6.0	GIF	Post- scrip t	ADRG	CADRG	CIB	Sun Raste r
<b>FRO M:</b>																	
NITF 8-bit JPEG				1,2							1,2						1,2
NITF VQ																	
NITF IM4																	
RPF																	
TIFF 6.0				1,2	1,2	1,2	1,2										1,2
GIF				1,2			1,2				1,2						1,2
Post- script																	
ADRG																	
CADR G																	
CIB																	
Sun Raster				1,2			1,2				1,2						

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1= NIMA Library

5= DE (1.1 and 2.0 are DE Ver. 1.1& DE ver.2.0)

2= IPL

6= DPDB

3= Information Access Services

Correspondence

to the Image Subheader in the IC field:

JPEG Lossy = C3

JPEG Lossless = C5

***Table 4.4.1-1 - Raster Products Format and Compression Requirements  
(TBR-005)***

**4.4.1.1 National Image Transmission Format (NITF) Ver. 2.0 Files**

The following requirements shall apply to all NITF 2.0 files generated by USIGS Systems/Segments. Table 4.4.1.1-1 provides a compliance overview followed by additional details in paragraphs 4.4.1.1.1 through 4.4.1.1.5 and Appendix 10.

**Table 4.4.1.1-1 - NITFS Interoperability Compliance Matrix**

<b>USIGS Segs/Systems</b>	NITFS 2.0 <u>Compliance</u>	NITFS 2.1 <u>Compliance</u>	NAT SDE <u>1.0, 1.1, 1.2</u>	Tactical VIMAS <u>SDE .9 w/ erata</u>	Tactical SAR <u>SDE .9 w/ erata</u>	Chipping ext. <u>ICHIPB to I2MAPD</u>	RPF Ext.
IPL	R, G	R, G, E3.0		in accordance with table 4.4.1.1.5-1.a----->----->----->----->			?
NIMA LIB	R, G	R, G, E3.0		in accordance with table 4.4.1.1.5-1.a----->----->----->----->			?
IA	R, G	R, G E3.0		in accordance with table 4.4.1.1.5-1.a----->----->----->----->			?
CIP	G	G, E2.5		in accordance with table 4.4.1.1.5-1.a----->----->----->----->			?
Scrnrs	R, G	R, G, E2.5		in accordance with table 4.4.1.1.5-1.a----->----->----->----->			?
DE	G	TBD		in accordance with table 4.4.1.1.5-1.a----->----->----->----->			?
IDEX II ODS	G	N/A		in accordance with table 4.4.1.1.5-1.a----->----->----->----->			?
IDEX II STAR	G	N/A		in accordance with table 4.4.1.1.5-1.a----->----->----->----->			?
Provider A LCM	G	G (TBR)		in accordance with table 4.4.1.1.5-1.a----->----->----->----->			?
Prov. B	G	G (TBR)		in accordance with table 4.4.1.1.5-1.a----->----->----->----->			?
WTS	R, G	R, G, E2.0		in accordance with table 4.4.1.1.5-1.a----->----->----->----->			?
IEC	R, G	R, G, E3.0		in accordance with table 4.4.1.1.5-1.a----->----->----->----->			?
FPE	R (TBR)	R, G, .. (E2.5 TBR)		in accordance with table 4.4.1.1.5-1.a----->----->----->----->			?
Hand Held	G (TBR)	TBD		in accordance with table 4.4.1.1.5-1.a----->----->----->----->			?
Comm Prod	H	G, (E3.0 TBR)		in accordance with table 4.4.1.1.5-1.a----->----->----->----->			?
IESS	Read hdr/subhdr only E2.5		N/A	N/A	Eff. 2.5		?

#### 4.4.1.1.1 NITF Header

All USIGS Systems/Segments shall populate the NITF 2.0 header fields as specified in Appendix 10.1-Table 10.1-1(NITF 2.1 Header and Sub-header information is also provided in Appendix 10 with a planned USIGS E3.0 effectivity - see paragraph 4.4.1.9). All USIGS systems/segments shall be NITFS compliant as required by the JITC, defined in *JIEO Circular 9008* for NITF 2.0, or in the NITFS Test and Evaluation Program Plan for NITF 2.1.

#### 4.4.1.1.1.2 Image Data Type

##### 4.4.1.1.1.2.1 Image Sub-Header

All USIGS Systems/Segments shall populate the NITF 2.0 image sub-header fields constrained as specified in Appendix 10.2-Table 10.2-1.

##### 4.4.1.1.1.2.2 Image Data

###### 4.4.1.1.1.2.2.1 Image Data Compression

Systems/Segments generating image files in NITF 2.0 format shall provide the image data in either uncompressed format or compress the image data using one of the following algorithms:

1. Eight-bit image data shall be compressed using JPEG DCT as specified in *Joint Photographic Experts Group Image Compression for the National Image Transmission Format Standard (NITFS)*, MIL-STD-188-198A.
2. Image data greater than eight-bits shall be compressed using 12-bit JPEG DCT as specified in Change Notice 2 of the *Joint Photographic Experts Group Image Compression for the National Image Transmission Format Standard (NITFS)*, MIL-STD-188-198A.
3. Image data shall be compressed using the Bi-Level compression algorithm as specified in *Bi-Level Image Compression for the NITFS*, MIL-STD-188-196.
4. Systems/Segments receiving image files in NITF 2.0 format that were originally compressed using the Vector Quantization algorithm shall provide the capability to decompress the imagery as specified in *Vector Quantization Decompression for the NITFS*, MIL-STD-188-199.

5. 12 bit JPEG compression is distinguished by JPEG Lossy and JPEG Lossless and are related to TFRD 1.3 and TFRD 4.3 processes respectively. Conversions reflected in Table 4.4.1-1 depict this relationship, as one could not recover to a JPEG Lossless quality once TFRD 1.3 or 2.3 had been performed. However, as the table shows a JPEG Lossy NITF 12 bit JPEG quality could be obtained from TFRD 1.3, 2.3, 4.3 or NITF uncompressed formats. JPEG Lossless and JPEG Lossy are also related to the NITF header codes of C3 and C5 respectively.

#### 4.4.1.3 Symbol Data Type

##### 4.4.1.3.1 Symbol Sub-Header

All USIGS Systems/Segments shall populate the NITF 2.0 symbol sub-header fields as specified in Table VI of *the National Imagery Transmission Format-Version 2.0 (MIL-STD-2500A)*. Specific implementation of NITF 2.0 symbol sub-header fields shall be constrained as specified in Appendix 10.3-Table 10.3-1.

##### 4.4.1.3.2 Symbol Data

All annotation requirements (including alphanumeric labels) shall be satisfied by USIGS Systems/Segments in accordance with *the National Imagery Transmission Format-Version 2.0 (MIL-STD-2500A)*, paragraph 5.6 and the *Computer Graphics Metafile (CGM) Implementation Standard* for the NITFS, MIL-STD-2301.

#### 4.4.1.4 Text Data Type

##### 4.4.1.5 4.4.1.4.1 Text Sub-Header

USIGS Systems/Segments shall populate the NITF 2.0 text sub-header fields as specified in Table VI of *the National Imagery Transmission Format-Version 2.0 (MIL-STD-2500A)*. Specific implementation of NITF 2.0 text sub-header fields shall be constrained as specified in Appendix 10.4-Table 10.4-1.

##### 4.4.1.4.2 Text Data

USIGS Systems/Segments text data sub-files shall be created in accordance with *the National Imagery Transmission Format-Version 2.0 (MIL-STD-2500A)*, paragraph 5.8.

#### 4.4.1.1.5 Data Extensions

USIGS Segments read, preserve, generate, and/or modify Controlled and<sup>1</sup> Registered Tagged Data Extensions as indicated in Tables 4.4.1.1.5-1a through 4.4.1.1.5-1e. With three exceptions, these requirements have been captured or derived from each segment's requirements document, each of which is the requirements driver, and are provided in the UIP to support analysis of system-wide interoperability. The three exceptions to this methodology are for the three lines that do not represent specific segments, but are generic lines representing, in a guidance fashion, how these types of segments should process tagged data extensions. These three lines are COTS-Based Exploitation Systems, Hand Held Producers, and Commercial Producers. In case of conflict between these tables and any segment's requirements document, the segment's requirements document take precedence.

##### 4.4.1.1.5.1 Derived Requirements in the Tables

In some cases the segment's processing requirements for the tagged extension(s) in the tables have been derived from high level functional requirements. An example of such a requirement is: The segment shall create an image chip. Derived from this would be the requirement in the table to generate a chipping tag. Some segments have the requirement to catalog imagery and imagery products. Derived from that is the need to read the tags that contain catalog metadata. In a similar manner, segments that produce imagery and imagery products for USIGS data stores have a derived requirement in the tables to generate tags that contain catalog metadata (e.g the image and product tags).

##### 4.4.1.1.5.2 USIGS Effectivities

USIGS Effectivity (E) 2.0 is base for the tables.

<sup>1</sup> The only Registered Tagged Data Extension addressed in the tables is I2MAPD, which is used in support of image chipping.

**Table 4.4.1.5-1a NITF Controlled and Registered Tagged Record Extension Requirements(TBR-034)**

PIAE VERSION:	2.0	3.0 Y2K	2.0	3.0	2.0	3.0 Y2K	2.0, 3.0	2.0, 3.0	2.0	3.0 Y2K	
<u>SEGMENTS</u>	TAG NAMES:	<u>PIAPRC</u>	<u>PIAPRD</u>	<u>PIAIMB</u>	<u>PIAIMC</u>	<u>PIATGA</u>	<u>PIATGB</u>	<u>PIAEVA</u>	<u>PIAEQA</u>	<u>PIAPEA</u>	<u>PIAEB</u>
IPL	R,P,M&G	P R,M&G E2.5 (TBR)	R,P,M&G	P R,M&G (TBR)	R,P,G	P R&G E2.5 (TBR)	R,P,G	R,P,G	R,P,G	P R&G E2.5 (TBR)	
NIMA Library	R,P,M&G	P R,M&G (TBR)	R,P,M&G	P R,M&G (TBR)	R,P,G	P R&G E2.5 (TBR)	R,P,G	R,P,G	R,P,G	P R&G E2.5 (TBR)	
Information Access	R,P,(TBD)	P R, (TBR)	R,P, ,(TBD)	P R, (TBR)	R,P,(TBD)	P R E2.5 (TBR)	R,P ,(TBD)	R,P ,(TBD)	R,P ,(TBD)	P R E2.5 (TBR)	
CIP	TBD )	TBD	TBD	NA	NA	NA	NA	NA	NA	NA	
Screener	TBD	TBD	TBD	NA	NA	NA	NA	NA	NA	NA	
RE/DE	G, P	P	NA	NA	NA	NA	NA	NA	NA	NA	
IDEX II	G	TBD	G	NA	G	TBD )	NA	NA	NA	NA	
DP/F LCM	G (TBR)	TBD	G (TBR)	NA	NA	NA	NA	NA	NA	NA	
EPS	G (TBR)	TBD	G (TBR)	NA	NA	NA	NA	NA	NA	NA	
COTS-Based Exploitation Systems	R,M,& G	R, M&&G	R,M&G	R,M,&G	R&G	R&G	R&G	R,G	R,G	R&G	
Integrated Exploitation Capability (IEC)	R,M& G,(TBD)	R,M&&G E2.5 (TBR)	R.,M&G,(T BD)	R,M.&G (TBR)	R&G (TBR)	R&G E2.5 (TBR)	R&G (TBR)	R,G,(TB D)	R,G,(TBD )	R&G E2.5 (TBR)	
FPE	P,R	P R (TBR)	P,R	P,R (TBR)	R,P	P,R E2.5	P,R	P,R	P,R	P,R E2.5	
Hand Held Producer	G	GE2.5	G	NA	G	GE2.5	G	G	G	G E2.5) (TBR)	
Commercial Producers	G	G E2.5	N/A	G	NA	NA	NA	NA	NA	NA	

Legend:

G = Generate

Y2K = Needed for Y2K compliance

M = Modify

R = Read

T = Generate for TFRD to NITFS  
conversion

P = Preserve

D = Determine tag presence to set Y/N  
flag**Table 4.4.1.1.5-1b NITF Controlled and Registered Tagged Record Extension Requirements(TBR-034)**

SDE VERSION:	NA	NA	NA	NA	NA	1.0, 1.1,1.2	1.1, 1.2	1.0, 1.1,1.2	1.0, 1.1,1.2	1.1, 1.2	1.0, 1.1, 1.2	1.1, 1.2	
SEGMENTS NAMES:	TAG	<sup>1</sup> I2MAPD	ICHIPIA	<sup>2</sup> ICHIPIB (TBR)	<sup>3</sup> ICHIIPC (TBR)	HISTOA	STDIDA	STDIDB	USE26A	USE03A	USE03B	IMBLKA	IMBLKB
IPL	PR E2.5 (TBR)	P, R&G	P,R&G E2.5 (TBR)	P, R&G E3.0 (TBR)	P,R,G,M E3.5	P, D	P,T,D	R,P,T	R,P	R,P,T	R,P	R,P	R,P,T
NIMA Library	P R E2.5 (TBR)	P, R&G	P,R&G E2.5 (TBR)	P, R&G E3.0 (TBR)	P,R,G,M E3.5	P, D	P,T,D	R,P,T	R,P	R,P,T	R,P	R,P	R,P,T
Information Access	P R E2.5 (TBR)	P, R (TBR)	P, R E2.5 (TBR)	P, R E3.0 (TBR)	TBD	P, D, (TBD)	P,D, (TBD)	R,P, (TBD)	R,P, (TBD)	R,P,(TB D)	R,P, (TBD)	R,P, (TBD)	R,P, (TBD)
CIP	NA	TBD	TBD	TBD	TBD	NA	NA	NA	NA	NA	NA	NA	NA
Screener	NA	G (TBR)	G E2.5 (TBR)	G E3.0 (TBR)	TBD	NA	NA	NA	NA	NA	NA	NA	NA
RE/DE	NA	G (TBR)	G (TBR)	G (TBR)	G E3.5	NA	G	G	NA	G	NA	NA	G
IDEX II	G	N/A	NA	NA	TBD	NA	G	G	NA	G	NA	NA	G
DP/F LCM	NA	NA	NA	TBD	G E3.5	NA	G	G	NA	G	NA	NA	G
EPS	NA	NA	NA	TBD	G E3.5	NA	G	G	NA	G	NA	NA	G
COTS-Base Exploitation Systems	R E2.5 (TBR)	R,M,&G (TBR)	R,M,G E2.5	R,M,G E3.0 (TBR)	R,M,G E3.5	R,P	R,P	R,P	R,P	R,P	R,P	R,P	R,P
Integrated Exploitation Capability (IEC)	R (TBD))	R,M,&G, (TBD)	R,M,G E2.5	R,M,G, (TBD)	R,M,G E3.5	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)	R,P,(TB D)	R,P,(TB D)	R,P,(TB D)	R,P,(TB D)
FPE	P, R E2.5 (TBR)	P,R	P,R (E2.5 (TBR)	P,R (E3.0 (TBR)	TBD	P,D	P,D	R,P	R,P	R,P	R,P	R,P	R,P
Hand Held Producer	NA	NA	NA	NA	TBD	NA	NA	NA	NA	NA	NA	NA	NA
Commercial Producers	NA	NA	NA	TBD	TBD	NA	NA	NA	NA	NA	NA	NA	NA

**Legend and Notes:**

G = Generate

Y2K = Needed for Y2K compliance

M = Modify

R = Read

T = Generate for TFRD to NITFS  
conversion

P = Preserve

D = Determine tag presence to set Y/N      <sup>1</sup> I2MAPD is a registered tag extension.  
flag<sup>2</sup> ICHIPB is pending NTB approval. When approved it will supersede ICHIPA.<sup>3</sup> ICHIPC is being developed to replace I2MAPD and ICHIPB to harmonize the national and tactical communities.**Table 4.4.1.1.5-1c NITF Controlled and Registered Tagged Record Extension Requirements(TBR-034)**

National (Nat) SDE VERSION:		1.0, 1.1,1.2	1.0, 1.1,1.2	1.0, 1.1,1.2	1.0, 1.1,1.2	1.0, 1.1,1.2	1.1,1.2	1.0, 1.1,1.2	1.0, 1.1,1.2	1.0, 1.1,1.2	1.0, 1.1,1.2	1.0, 1.1,1.2
SEGMENTS	TAG NAMES:	SECTGA	RPC00A	STREOA	MPD26A	MPD03A	MPD03B	MOD26A	IMS00A	HRDCPA	REFLNA	MENN3A*
IPL	P,T	R or D,P,T	R,T	R,P,T	R,P	P,T	P,T	P,T	P,T	P,T	P,T	P,T
NIMA Library	P,T	R or D,P,T	R,T	R,P,T	R,P	P,T	P,T	P,T	P,T	P,T	P,T	P,T
Information Access	P ,(TBD)	R or D,P	P ,(TBD)	R,P ,(TBD)	P ,(TBD)	P ,(TBD)	P ,(TBD)	P ,(TBD)	P ,(TBD)	P ,(TBD)	P ,(TBD)	P ,(TBD)
CIP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Screener	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE/DE	G	G	G	G	NA	G	G	G	G	G	G	G
IDEX II IES STAR	G	G	G	G	NA	G	G	G	G	G	G	G
DP/F LCM	G	G	G	G	NA	G	G	G	G	G	G	G
EPS	G	G	G	G	NA	G	G	G	G	G	G	G
COTS-Based Exploitation Systems	R,P	R,P	R,P	R,P	R,P	R,P	R,P	R,P	R,P	R,P	R,P	R,P
Integrated Exploitation Capability (IEC)	R,P,(TBD) )	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)
FPE	P	R or D, P	P	R,P	P	P	P	P	P	P	P	P
Hand Held Producer	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Commercial Producers	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

**Legend:**

G = Generate

Y2K = Needed for Y2K compliance

M = Modify

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R = Read

T = Generate for TFRD to NITFS \* = Tag name is sensitive. See SDE document for exact name.  
conversion

P = Preserve

D = Determine tag presence to set Y/N  
flag

**Table 4.4.1.1.5-1d NITF Controlled and Registered Tagged Record Extension Requirements(TBR-034)**

					VIMAS SAR							
Nat & Tactical (Tac) SDE VERSION: 1.1,1.2    1.1,1.2    1.1,1.2    1.2					0.9	0.9	0.9	0.9	0.9	0.9	0.9	
SEGMENTS	TAG NAMES:	ACIN3A*	PATN3A*	RADSDA	CSDXXA*	AIMIDA	EXPLTA	BLOCKA	SECTGA	MPDSRA	MENSRA	ACFTA
IPL	P,T	P,T	P,T	P,T	P,D	R(TBR),P	P	P	P	P	P	P,D
NIMA Library	P,T	P,T	P,T	P,T	P,D	R(TBR),P	P	P	P	P	P	P,D
Information Access	P	P	P	P	P,D ,(TBD)	R(TBR),P	P	P	P	P	P	P,D ,(TBD)
CIP	NA	NA	NA	NA	G	G	G	G	G	G	G	G
Screener	NA	NA	NA	NA	G	G	G	G	G	G	G	G
RE/DE	G	G	NA	G ,(TBD)	NA	NA						
IDEX II	G	G	G	NA	NA	NA	NA	NA	NA	NA	NA	NA
DP/F LCM	G	G	G	G E3.0	NA	NA						
EPS	G	G	NA	R,P E3.0	NA	NA						
COTS-based Exploitation Systems	R,P	R,P	R,P	R,P E3.0	R,P	R,P						
Integrated Exploitation Capability (IEC)	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)	TBD	R,P,(TBD)	R,P,(TBD)						
FPE	P	P	P	P	P,D	R(TBR),P	P	P	P	P	P	P
Hand Held Producer	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Commercial Producers	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

**Legend:**

G = Generate

Y2K = Needed for Y2K compliance

M = Modify

R = Read

T = Generate for TFRD to NITFS

\* = Tag name sensitive. See SDE document for exact name.

conversion

P = Preserve

D = Determine tag presence to set Y/N

flag

**Table 4.4.1.5-1e NITF Controlled and Registered Tagged Record Extension Requirements(TBR-034)**

Tac and Commercial SDE VERSION:	SAR 0.9	SAR 0.9	VIMAS 0.9	VIMAS 0.9	VIMAS 0.9	VIMAS 0.9	VIMAS 0.9	VIMAS 0.9	COMM1 0.9	COMM1 0.9	COMM1 0.9		
SEGMENTS	TAG NAMES:		PATCHA	MTIRPA	BANDSA	EXOPTA	MSTGTA	RPC00A	SENSRA	STEROB	STDIDC	USE00A	STREOB
IPL	P	P	P	R(TBR),P	P		D,P	P	R,P	R,P,D	R,P	R,P	
NIMA Library	P	P	P	R(TBR),P	P		D,P	P	R,P	R,P,D	R,P	R,P	
Information Access	P	P	P	R(TBR),P	P		D,P ,(TBD)	P	R,P ,(TBD)	R,P,D,(TBD)	R,P ,(TBD)	R,P ,(TBD)	
CIP	G	G	G	G	G	G	G	G	G	R,P	R,P	R,P	
Screener	G	G	G	G	G	G	G	G	G	NA	NA	NA	
RE/DE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
IDEX II ODS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
IDEX II IES STAR	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
DP/F LCM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
EPS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
COTS-based Exploitation Systems	R,P	R,P	R,P	R,P	R,P	R,P	R,P	R,P	R,P	R,P	R,P	R,P	
Integrated Exploitation Capability (IEC)	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)	R,P,(TBD)	
FPE	P	P	P	R(TBR),P	P		D,P	P	R,P	R,P	R,P	R,P	
Hand Held Producer	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Commercial Producers	NA	NA	NA	NA	NA	NA	NA	NA	NA	G	G	G	

**Legend:**

G = Generate

Y2K = Needed for Y2K compliance

M = Modify

R = Read

T = Generate for TFRD to NITFS  
conversion

P = Preserve

D = Determine tag presence to set Y/N  
flag

**Table 4.4.1.1.5-1f NITF Controlled and Registered Tagged Record Extension Requirements(TBR-034)**

EXTENSION VERSION:		RPF	RPF	RPF	RPF/CIB	RPF/CAD
SEGMENTS	TAG NAMES:	NA	NA	NA	(TBD)	RG
IPL		P	P	P		
NIMA Library (DPDW)		P,R	P,R	P,R		
Information Access		P	P	P		
CIP		NA	NA	NA		
Screener		NA	NA	NA		
RE/DE		NA	NA	NA		
IDEX II IES STAR		NA	NA	NA		
DP/F LCM		NA	NA	NA		
EPS		NA	NA	NA		
COTS-based Exploitation Systems						
Integrated Exploitation Capability (IEC)						
FPE		P	P	P		
Hand Held Producer		NA	NA	NA		
Commercial Producers		NA	NA	NA		

R = Read

G = Generate, to include modification of existing tags

P = Preserve

M = Modify

T = Generate for TFRD to NITFS conversion

D = Determine tag presence to set Y/N flag

#### 4.4.1.1.5.1 Support Data Extensions for National Data

USIGS Systems/Segments shall store exploitation support data applicable to National image data in Support Data Extensions (SDE) as documented in *Support Data Extensions (SDE) (Version 1.2) for the National Imagery Transmission Format of the National Imagery Transmission Format Standard Version 2.0, 20 May 1996.*

#### 4.4.1.1.5.2 Support Data Extensions for Tactical Data-SAR

USIGS Systems/Segments shall store exploitation support data applicable to Tactical SAR image data in Synthetic Aperture Radar Support Data Extensions (Airborne) as documented *Compendium of Controlled Extensions for National Imagery Transmission Format Standard (NITFS), 25 August 1998.*

#### 4.4.1.1.5.3 Support Data Extensions for Tactical Data-EO, IR, and MS

USIGS Systems/Segments shall store exploitation support data applicable to Tactical EO, IR, or MS image data in NITFS Tagged Record Extensions as documented in *Compendium of Controlled Extensions for National Imagery Transmission Format Standard (NITFS), 25 August 1998.*

#### 4.4.1.1.5.4 Support Data Extension for National Intel Sub-images (chips)

USIGS Systems/Segments shall provide the ICHIPB controlled tag to provide the data needed to mensurate and to calculate geopositions of features on National Intel Imagery Products (chips) per NTB RFC 97-014 as documented in *the NITFS Tagged Record Extension Registry*. This will only be used for Non-dewarped chips. 12MAPD shall be implemented for more complex chips.

#### 4.4.1.1.5.5 Profile for Imagery Archive Extensions

USIGS Systems/Segments shall store metadata applicable to imagery-based products in NITFS Profile for Image Archive Extensions as documented in *National Imagery Transmission Format Standard Profile for Imagery Access Extensions (PIAE), Version 3.0.*

#### 4.4.1.1.5.6 Compression Extensions

USIGS Systems/Segments compressing image data with the 12-bit JPEG algorithm shall include the JPEG Post-Processing Extensions as documented *Compendium of*

*Controlled Extensions for National Imagery Transmission Format Standard (NITFS), 25 August 1998.*

#### 4.4.1.1.5.7 RPF Extensions

USIGS Systems/Segments generating Raster Product Files shall include the RPF Extensions as documented in *CADRG, MIL-C-89038, CIB, MIL-C-89041, and RPF, MIL-STD-2411*.

#### 4.4.1.1.5.8 DPPDB Extensions

USIGS Systems/Segments generating Digital Point Positioning Data Base Files shall include the DPPDB Extensions as documented in *MIL-PRF-89034*.

#### 4.4.1.1.5.9 Commercial Imagery Extensions

USIGS Systems/Segments processing Commercial Electro Optical (EO) Imagery Files shall include the Extensions as documented in *Compendium of Controlled Extensions for National Imagery Transmission Format Standard (NITFS), 25 August 1998*.

#### 4.4.1.1.6 Nima Library (NL) File Naming Convention

Nima Library (NL) will use file naming convention for NITF 2.0 files as specified in S2035A.

### 4.4.1.2 Tape Format Requirements Document (TFRD) Files

#### 4.4.1.2.1 Image Data

USIGS Systems/Segments generating image files in TFRD format shall format the image data as specified in paragraph 3.1.4 of the *Tape Format Requirements Document, S2025P, TCS-055B-BA02767-93*.

##### 4.4.1.2.1.1 Image Data Compression/Decompression

USIGS Systems/Segments generating image files in TFRD format shall compress and decompress the full resolution image data using one of the following algorithms:

1. Discrete Cosine Transform (DCT) as specified in Appendix 10.9 and 10.10 of the *Tape Format Requirements Document*, S2025P, TCS-055B-BA02767-93.
2. Differential Pulse Code Modulation (DPCM) as specified in Appendix 10.3 and 10.4 of the *Tape Format Requirements Document*, S2025P, TCS-055B-BA02767-93.

#### 4.4.1.2.2 Metadata

USIGS Systems/Segments shall include the available metadata with imagery and image products.

For TFRD files, USIGS Systems/Segments shall transfer metadata in the Support Block as defined in Para. 3.1.3 of the *Tape Format Requirements Document*, S2025P, TCS-055B-BA02767-93.

#### 4.4.1.2.3 TFRD File Naming Convention

The impact of TFRD file names to enterprise-wide USIGS Systems/Segments is still under evaluation. The following information is provided to assist in addressing TFRD files in a common way, depending on the CONOPS and role. NL will keep the TFRD support data in a separate file in the Library. It will provide that file unmodified to users whether they request the R0 or any RRDS of that image. The "isd" file provided will be as sent by the source and not modified for RRDS. This file will be modified for chips to reflect the nature of the chipping. NL will use the current IDEX naming convention:

29AUG8911122233XX00000\_0100001YY1000010.r0.tfd [r0-r7]  
29AUG8911122233XX00000\_0100001YY1000010.isd

This naming convention will apply to all segmented TFRD data. (This is the way IDEX performs today.) TFRD 4.3 uses 2 files; TFRD 1.3 uses 1 file. Since there is no naming convention for TFRD 1.3 or 2.3, an initial recommended practice uses the TFRD 4.3 model. NL will also use the 40-character name for all new 4.3 products. (Some IDEX legacy uses 24 character plus 16 blanks.)

In addition, for DDS images, which will have the 40 character id, the 27 character indicates the format (i.e. 0=1.3, etc.)

#### 4.4.1.3 Tagged Image File Format Files

##### 4.4.1.3.1 Image Data

USIGS Systems/Segments shall format the image data within TIFF files in accordance with *TIFF*, Revision 6.0, Final-June 3, 1992.

##### 4.4.1.3.2 Metadata

USIGS Systems/Segments shall include the available metadata with imagery and image products.

USIGS Systems/Segments shall provide metadata associated with TIFF formatted files using the USIGS Standard Metadata File defined in paragraph 4.4.6.1.

The USIGS Standard Metadata File shall be named in accordance with paragraph 4.4.6.1.1.

##### 4.4.1.3.3 Nima Library (NL) TIFF File Naming Convention

NL will use the following file naming convention for TIFF files: filename.r0.tif where filename is the import base name and r0 is the rset level.

#### 4.4.1.4 Sun Raster Files

##### 4.4.1.4.1 Image Data

USIGS Systems/Segments shall format the image data within Sun Raster files in accordance with *Solaris, System Software Answer Book*.

##### 4.4.1.4.2 Metadata

USIGS Systems/Segments shall include the available metadata with imagery and image products.

USIGS Systems/Segments shall provide metadata associated with Sun Raster formatted files using the USIGS Standard Metadata File defined in paragraph 4.4.6.1.

The USIGS Standard Metadata File shall be named in accordance with paragraph 4.4.6.1.1.

4.4.1.4.3 Nima Library (NL) Raster File Naming Convention

NL will use the following file naming convention for Sun raster files:  
filename.ras where filename is the import base name

4.4.1.5 Graphic Interchange Format (GIF) Files

4.4.1.5.1 Image Data

USIGS Systems/Segments shall format the image data within GIF files in accordance with *GIF 89a, 31 July 1990, Compuserve Incorporated*.

4.4.1.5.2 Metadata

USIGS Systems/Segments shall include the available metadata with imagery and image products.

USIGS Systems/Segments shall provide metadata associated with GIF formatted files using the USIGS Standard Metadata File defined in paragraph 4.4.6.1.

The USIGS Standard Metadata File shall be named in accordance with paragraph 4.4.6.1.1.

4.4.1.5.3 Nima Library (NL) GIF File Naming Convention

NL will use the following file naming convention for Sun GIF files:  
filename.gif where filename is the import base name.

4.4.1.6 Postscript Files

4.4.1.6.1 Image Data

USIGS Systems/Segments shall format the image data within Postscript files in accordance with the *PostScript Language Document Structuring Conventions Specification*, LPS5001.

#### 4.4.1.6.2 Metadata

USIGS Systems/Segments shall include the available metadata with imagery and image products.

USIGS Systems/Segments shall provide metadata associated with Postscript formatted files using the USIGS Standard Metadata File defined in paragraph 4.4.6.1.

The USIGS Standard Metadata File shall be named in accordance with paragraph 4.4.6.1.1.

#### 4.4.1.7 Compressed Arc Digital Raster Graphics

USIGS Systems/Segments shall format Compressed Arc Digital Raster Graphics (CADRG) files in accordance with *Compressed Arc Digital Raster Graphics (CADRG), MIL-C-89038*.

#### 4.4.1.8 Raster Product Format

USIGS Systems/Segments shall format Raster Product Format (RPF) files in accordance with *Raster Product Format (RPF), MIL-STD-2411* and *Integration of Raster Product Format in NITF, MIL-STD-2411-2*.

#### 4.4.1.9 National Image Transmission Format (NITF) Ver. 2.1 Files (E3.0)

USIGS Systems/Segments shall support National Imagery Transmission Format (NITF) Version 2.1 files in accordance with *National Imagery Transmission Format-Version 2.1 (MIL-STD-2500B)* and NITF Version 2.1 Standards Compliance and Interoperability Test & Evaluation Program Plan at USIGS E3.0.

##### 4.4.1.9.1 NITF 2.1 Header

All USIGS Systems/Segments shall populate the NITF 2.1 header fields as specified in *National Imagery Transmission Format-Version 2.1 (MIL-STD-2500B)* as constrained in Appendix 10, paragraph 10.1.2 and Table 10.1-2.

##### 4.4.1.9.2 Image Types

###### 4.4.1.9.2.1 Image Sub-Header

All USIGS Systems/Segments shall populate the NITF 2.1 image sub-header fields as specified in *National Imagery Transmission Format-Version 2.1 (MIL-STD-2500B)* as constrained in Appendix 10, paragraph 10.2.2 and Table 10.2-2.

#### 4.4.1.9.3 Graphic Data Type

##### 4.4.1.9.3.1 Graphic Sub-Header

All USIGS Systems/Segments shall populate the NITF 2.1 symbol sub-header fields as specified in the *National Imagery Transmission Format-Version 2.1 (MIL-STD-2500B)*. Specific implementation of NITF 2.1 symbol sub-header fields shall be constrained as specified in Appendix 10, paragraph 10.3.2 and Table 10.3-2.

#### 4.4.1.9.4 Text Data Type

##### 4.4.1.9.4.1 Text Sub-Header

USIGS Systems/Segments shall populate the NITF 2.1 text sub-header fields as specified in *National Imagery Transmission Format-Version 2.1 (MIL-STD-2500B)*. Specific implementation of NITF 2.1 text sub-header fields shall be constrained as specified in Appendix 10, paragraph 10.4.2 and Table 10.4-2.

#### 4.4.1.9.5 Tagged Record Extensions

USIGS Systems/Segments shall read, preserve, and/or generate Controlled Tagged Record Data Extensions as indicated in Tables 4.4.1.1.5-1 through 4.4.1.1.5-5:

#### 4.4.1.10 Arc Digital Raster Graphics

USIGS Systems/Segments shall format Arc Digital Raster Graphics (ADRG) files in accordance with *Arc Digital Raster Graphics (ADRG), MIL-A-89007*.

#### 4.4.1.11 Controlled Image Base

USIGS Systems/Segments shall format Controlled Image Base (CIB) files in accordance with *DMA (DoD) Performance Specification for Controlled Image Base (CIB), MIL-PRF-89041A*.

### **4.4.2 Vector Products**

#### 4.4.2.1 Vector Product Format

USIGS Systems/Segments shall format Vector Product Format (VPF) files in accordance with *Vector Product Format, MIL-STD-2407*.

#### 4.4.2.2 Digital Feature Analysis Data Base

USIGS Systems/Segments shall format Digital Feature Analysis Data Base (DFAD) files in accordance with *Digital Feature Analysis Data Base (DFAD), Level 1, MIL-D-89005* and *Digital Feature Analysis Data Base (DFAD), Level 2, MIL-D-89006*.

#### 4.4.2.3 Digital Nautical Chart

USIGS Systems/Segments shall format Digital Nautical Chart (DNC) files in accordance with *Digital Nautical Chart (DNC), Amendment 2, MIL-D-89023*.

#### 4.4.2.4 Digital Topographic Product

USIGS Systems/Segments shall format Digital Topographic Product (DTOP) files in accordance with *Digital Topographic Product (DTOP), MIL-D-89037*.

#### 4.4.2.5 Relocatable Target Assessment Data

USIGS Systems/Segments shall format Relocatable Target Assessment Data (RTAD) files in accordance with *Relocatable Target Assessment Data (RTAD), MIL-R-89013*.

#### 4.4.2.6 Urban Vector Smart Map

USIGS Systems/Segments shall format Urban Vector Smart Map (UVMAP) files in accordance with *Urban Vector Smart Map Databases, MIL-U-89035*.

#### 4.4.2.7 Vector Product Interim Terrain Data

USIGS Systems/Segments shall format Vector Product Interim Terrain Data (VITD) files in accordance with *Performance Specification for Vector Product Interim Terrain Data (VITD, MIL-PRF-89040)*.

#### 4.4.2.8 Vector Smart Map

USIGS Systems/Segments shall format Vector Smart Map (VMAP) files in accordance with *Vector Smart Map (VMAP) Level 0, MIL-V-89039*, *Vector Smart Map (VMAP) Level 1, MIL-V-89033*, and *Vector Smart Map (VMAP) Level 2, Amendment 3, MIL-PRF-89032*.

#### 4.4.2.9 World Vector Shoreline Plus

USIGS Systems/Segments shall format World Vector Shoreline Plus (WVSPLUS) files in accordance with *World Vector Shoreline Plus (WVSPLUS), (draft), MIL-W-89012A*.

#### 4.4.2.10 Foundation Feature Data

USIGS Systems/Segments shall format Foundation Feature Data (FFD) files in accordance with *Associated Performance Specification for Foundation Feature Data (FFD), MIL-MCGT-0189*.

### **4.4.3 Video Products (Exx)**

USIGS Systems using Video shall reference *USIGS Video Imagery Standards Profile (VISP), DoD/IC Video Working Group, (current version is Ver 1.3, 6 March 1998)* for video compression formats, sampling structures, signal transport and processing, conversion practices, and metadata practices. The following USIGS Systems/Segments shall import and export video products in the MPEG-2 compression format:

- a. NIL/CIL
- b. IPL

#### 4.4.3.1 Motion Picture Experts Group - 2 (MPEG-2) Files

##### 4.4.3.1.1 Video Data

USIGS Systems/Segments shall format the video data within MPEG-2 files in accordance with *Motion Picture Experts Group (MPEG) Document-2, (ISO/IEC 13818) and as profiled in the VISP in item 9701 with MPEG-2, 4:2:2 Production Profile @ Main Level and MPEG-2, 4:2:0 Main Profile @ Main Level*.

##### 4.4.3.1.2 Metadata

USIGS Systems/Segments shall include the metadata associated with video in accordance with the *Video Working Group Core Video Metadata Profile (with future effectivities planning for the Geospatial Metadata, Intelligence Video Index)*. Metadata shall be encoded in accordance with Item 9711 and Study 9712 of the *USIGS VISP, DoD/IC Video Working Group, Ver 1.3*.

#### **4.4.4 Grid Products**

##### **4.4.4.1 Digital Terrain Elevation Data**

USIGS Systems/Segments shall format Digital Terrain Elevation Data (DTED) files in accordance with *Digital Terrain Elevation Data. (DTED) 1 & 2, Amendment 1, MIL-PRF-89020A.*

##### **4.4.4.2 World Mean Elevation Data**

USIGS Systems/Segments shall format World Mean Elevation Data (WMED) files in accordance with *DMA Product Specification for DMA World Mean Elevation Data (WMED), PS/1CM/100.*

##### **4.4.4.3 Terrain Contour Matching**

USIGS Systems/Segments shall format Terrain Contour Matching (TERCOM) files in accordance with *Product Specification for Terrain Contour Matching (TERCOM) (Landfall) Matrix/Map Catalog, PS/4GE/100, Product Specification for Terrain Contour Matching (TERCOM) (Enroute/Midcourse) Matrix/Map Catalog, PS/4GF/100, and Product Specification for Terrain Contour Matching (TERCOM) (Terminal) Matrix/Map Catalog, PS/4GG/100.*

##### **4.4.4.4 DMA Vertical Obstruction File**

USIGS Systems/Segments shall format DMA Vertical Obstruction Files (DVOF) files in accordance with *DMA Technical Manual- DMA Vertical Obstruction File (DVOF), DMA TM 8321.1.*

#### **4.4.5 Document Interchange**

##### **4.4.5.1 Hypertext Markup Language (HTML)**

USIGS Systems/Segments shall format documents in accordance with *RFC-1866: Hypertext Markup Language (HTML), Internet Version 4.0, 1997.*

#### **4.4.6 Metadata Interchange**

##### **4.4.6.1 USIGS Standard Metadata File**

USIGS Systems/Segments shall format metadata within an ASCII tab-delimited file in accordance with the USIGS Conceptual Data Model (UCDM) as implemented in the *A&D Logical Data Model*.

#### 4.4.6.1.1 USIGS Standard Metadata File Naming Convention

USIGS Standard Metadata Files shall be named in accordance with the naming convention specified in the *USIGS Technical Architecture (UTA)*, Para. 5.1.1 (TBR 039).

#### 4.4.6.2 USIGS Bulk Transfer of Metadata between Libraries

USIGS Systems/Segments shall transfer metadata using the USIGS Standard Metadata File defined in Para. 4.4.6.1 using the IngestMgr interface defined in Para. 4.3.1.

#### 4.4.6.3 IPL 1.x Metadata Transfer (E00)

USIGS Systems/Segments submitting image products to IPL 1.x shall provide metadata associated with non-NITF formatted files using the IPL Data File defined in paragraph 50.9 of the *Interface Control Document for IPL 1.0*, 1947089E.

The IPL Data File shall be named in accordance with paragraph 30.1.1 of the *Interface Control Document for IPL 1.0*, 1947089E.

#### 4.4.6.4 IEC Retrieval of ASCII and EBCDIC ISD

Both IEC and MINT will support data interchange of ASCII and EBCDIC ISD formats.

### **4.4.7 Other Products**

**Table 4.4.7-1 - Other Products Format Requirements (TBR-028)**

(Placeholder for Table)

#### 4.4.7.1 Digital Aeronautical Flight Information Data

USIGS Systems/Segments shall format Digital Aeronautical Flight Information (DAFIF) files in accordance with *Digital Aeronautical Flight Information File (DAFIF)*, PS/1FD/086.

#### 4.4.7.2 Automated Air Facilities Information Data

USIGS Systems/Segments shall format Automated Air Facilities Information (AAFIF) files and TFADS-A files in accordance with *NIMA Product Specification for the Automated Air Facilities Information File (AAFIF)*, PS/1GE/005.

### **4.5 USIGS Metadata Requirements**

#### **4.5.1 Standard Imagery and Geospatial Metadata**

##### 4.5.1.1 Not Used

##### 4.5.1.2 Queryable Metadata

USIGS Systems/Segments shall support user queries for imagery, standard image products, and geospatial data using the metadata elements specified in the *USIGS Conceptual Data Model (UCDM)* as implemented in the *A&D Logical Data Model*.

USIGS Systems/Segments shall implement the Backus-Naur Form (BNF) for the Boolean query syntax as defined in Paragraph 4 of the *Geospatial and Imagery Access Services Specification*.

#### **4.5.2 DATASET Unique Identifier**

For unique identification of datasets, USIGS Systems/Segments are to rigorously apply guidelines in paragraph 4.5.2 of the A&D LDM for determining dataset metadata attributes which provide unique mappings to the DATASET-IDENTIFICATION-TEXT attribute.



## SECTION 5

### VERIFICATION

#### 5.1 Verification Methods

The implementation of the requirements identified in Section 4 of this document shall be verified through the USIGS test and evaluation strategy. The test strategy outlined below is further defined in TBD-033. The USIGS test strategy is intended to facilitate the planning of test and evaluation activities into a coherent and integrated approach that promotes conformance to the requirements and objectives of the USIGS Interoperability Profile. The methods of verifying proper implementation of the requirements of Section 4 include:

- standards compliance testing
- functional verification/acceptance testing
- integration testing
- interoperability certification testing
- security accreditation , and
- operational assessments

An overview of each of these verification methods is provided below. Although the verification methods are discussed individually, this does not mean that the methods must be executed individually. The methods may be combined at appropriate phases of system development tailored to the specific development approach. The guidance in TBD-033 will assist implementing PMs to establish the appropriate test strategy and test events applicable to the candidate system.

#### 5.2 Standards Compliance Testing

The methodologies used to establish compliance to standards vary depending on the type and complexity of the standard(s), the nature and availability of established test methods, and the maturity of the standards and the systems or products implementing the standards. Implementing program managers (PMs), using the guidance in TBD-033 and assisted by the Joint Interoperability Test Command (JITC) as needed, will establish the conformance test approach suitable for each standard applicable to the candidate system.

### **5.2.1 NITFS Standards Compliance**

NITFS Standards Compliance plays an important role within the USIGS. One of the fundamental objectives of USIGS is to deliver applications that are truly interoperable. Although NITFS compliance testing can not guarantee a particular product will be interoperable in all environments, it does provide a high degree of confidence that two or more NITFS tested products will achieve the desired interoperability for the exchange of imagery. Achieving NITFS Compliance to the appropriate compliance level(s) prior to integration at one or more of the USIGS sites will reduce the risk that a USIGS System will be unable to successfully exchange image data with other USIGS components.

#### **5.2.1.1 USIGS NITFS Compliance Requirements**

NITFS Standards Compliance requirements are divided into generate (or pack) requirements and receive (or unpack) requirements. Applications that generate NITF files do not need to implement all of the NITFS as long as they do not implement anything that is not allowed by the NITFS. Applications that receive and process NITF files must implement all NITFS functionality (within the bounds of one or more NITFS-defined compliance levels) to ensure total interoperability. Details of the compliance requirements can be found in the NITF 2.0 and NITF 2.1 test program plans.

##### **5.2.1.1.1 NITF Version 2.0**

All NITFS Compliance for NITF Version 2.0 shall be performed by the JITC in accordance with JIEO Circular 9008, NITFS Certification Test and Evaluation Program Plan, 30 June 1993 with Errata Sheet dated 20 June 1997.

##### **5.2.1.1.2 NITF Version 2.1**

All NITFS Compliance for NITF Version 2.1 shall be performed by the JITC in accordance with N-0105/98 NITFS Standards Compliance and Interoperability Test and Evaluation Program Plan. NITF Version 2.1 compliance testing will formally begin on 1 October 1998. Testing services will be done in parallel with NITF 2.0 testing until 31 December 1999 (TBD) when testing of NITF 2.0-only pack capabilities will cease. Fielded systems must no longer produce NITF 2.0 formatted files after 1 October 2003 . To support interoperability during the transition period,

all NITF 2.1 unpack capable systems must support proper interpretation and use of NITF Version 2.0 formatted files. All NITF 2.1 pack capable systems must be able to limit the creation of NITF file contents to the constraints of NITF version 2.0. The requirement to unpack and interpret NITF 2.0 files will continue indefinitely.

### **5.2.2 Other Standards Compliance**

Implementers should recognize that USIGS Systems/Segments may perform other roles within site architectures that may require additional standards compliance. The guidance in TBD-033 will assist implementing PMs establish the standards compliance test approach suitable for each standard applicable to the candidate system.

## **5.3 Functional Verification/Acceptance Testing**

Functional verification and/or acceptance testing is conducted early in the acquisition process, frequently during in-plant factory acceptance testing (FAT) for systems governed by DOD 5000.2-R. The purpose is to determine if the system performs the functions and provides the level of performance as specified in the requirements documentation.

## **5.4 Integration Testing**

Integration testing is also conducted early in the acquisition process, frequently during in-plant FAT for systems governed by DOD 5000.2-R. As CORBA and distributed computing systems become more widely available and recognized formal documentation for testing will be developed; however, in the interim integration testing will follow a more Intersystem approach as described in section 5.4.3. This test activity also includes tests regarding the Common Operating Environment (COE) in which the fielded system will operate. DII (Defense Information Infrastructure)-COE Level 5 is a USIGS requirement. The JITC, Defense Information Systems Agency (DISA), and Service Test Laboratories (e.g. Rome Labs for DODIIS migration systems) will support and assist USIGS implementers in meeting this requirement.

### **5.4.1 Validation Testing**

The USIGS test strategy enables developmental validation testing of candidate server and client applications in a testbed environment that is used to validate new standards, changes to existing standards, and associated interface specifications. It

provides an opportunity to demonstrate the integration of multiple clients with multiple or individual servers prior to completion of development and other aspects of the overall test strategy.

#### **5.4.2 Reference Implementation Development**

The Government, as part of the USIGS Program, often develops *Reference Implementations* of the interfaces described in this document. These Reference Implementations will be made accessible in a testbed environment where other USIGS and client developers can install their applications and validate their implementations. Any anomalies or issues resulting from this testing will be fed back into the UIP and appropriate standards and interface specifications. This will demonstrate the adequacy of the interface specification and any changes from it will be processed via RFCs.

#### **5.4.3 Intersystem Testing and Demonstrations**

NIMA will conduct periodic functional and/or operational demonstrations of USIGS functionality during the development phases. The success of these test/demonstrations will be determined by the degree of compliance of the USIGS Systems/Segments to the requirements contained in Section 4 of this document. Interface and Method compliance shall follow a verification approach using Table 5.4.3-1 (TBD)

### **5.5 Interoperability Conformance Testing**

Conformance testing is necessary to assess adherence to a standard(s) and to detect implementation errors in systems or products built using the standard(s). However, conformance testing alone does not assure interoperability between conforming systems, nor does it ensure that user functional requirements are fully satisfied.

#### **5.5.1 DOD Policy**

DOD Directive 4630.5, dated 12 November 1992, and corresponding DOD Instruction 4630.8, dated 18 November 1992, mandate that all "new C3I systems (including non-developmental systems) and major changes (e.g., release of a new software version) to existing systems that must interact with or be integrated into the C3I structures of the Department" will be interoperable. "That interoperability

and integration of C3I requirements shall be determined during the requirements validation process and shall be updated as necessary throughout the acquisition period, deployment, and operational life of a system." The interoperability testing process developed at the JITC is designed to meet this requirement. The program was developed to provide comprehensive interoperability testing for all DOD automated information systems.

### **5.5.2 Interoperability Certification**

5.5.2.1 Certification of Command, Control, Communications, Computers and Intelligence (C4I) systems and equipment for end-to-end interoperability is the culmination of the successful completion of a number of test-related activities. As described in the Joint Interoperability and Engineering Organization (JIEO) Circular 9002, interoperability testing will be conducted throughout a system's life cycle. JITC will use interoperability certification testing data collected from a number of sources in making the independent assessment upon which interoperability certification will be based.

5.5.2.2 JITC will evaluate test results for all CIGSS migration systems for interoperability and certify them in accordance with the guidelines established by JITC and JIEO Circular 9002, "Requirements Assessment and Interoperability Certification of C4I and Automated Information System (AIS) Equipment and Systems." Results of JITC interoperability testing will support the fielding decisions of specific USIGS systems and associated upgrades by the Milestone Decision Authority (MDA). The particular MDA makes interim and final fielding decisions based on input from results of standards compliance testing, integration testing, interoperability testing, security accreditation, and various field test activities.

## **5.6 Security Accreditation**

Implementing Program Managers (PMs) are responsible for identifying and providing compliance with the applicable DOD and, where applicable, Director, Central Intelligence Directive (DCID) security accreditation requirements. PMs will ensure the appropriate accreditation tests and evaluations are performed and demonstrated to their designated security accreditation authorities. In addition to security accreditation for newly developed/acquired or modified system and core

components, the site Information System Security Officer (ISSO) must also validate that the USIGS-capable system meets site security compliance requirements per DOD and, where applicable, DCID directives.

### **5.7 Operational Assessments**

The purpose for operational assessments of USIGS is to provide a measure of the operational effectiveness and suitability, including the progressive levels of operational interoperability, achieved by USIGS capable systems as they evolve under NIMA directed programs. The designated Operational Test Agency (OTA) for NIMA will conduct periodic Operational Assessments (OAs) of the USIGS as employed in a joint operational environment such as in support of a Joint Task Force (JTF) and its components during a joint training exercise. The effectiveness and suitability of the support will be measured with respect to the operational imagery and geospatial system requirements in applicable requirements documents (e.g. MNS, ORDs, etc.) and this UIP. The OAs will include inputs from Service and/or Agency operational tests and evaluations of individual USIGS components.

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## **SECTION 6**

### **NOTES**

## 6.1 Acronyms

API	Application Program Interface
ATM	Asynchronous Transfer Mode
BNF	Backus-Naur Form
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance
CAWS	Commercial Analyst Workstation
CGM	Computer Graphics Metafile
CIGSS	Common Imagery Ground Surface System
CIL	Command Information Library
CIP	Common Imagery Processor
COE	Common Operating Environment
CORBA	Common Object Request Broker Architecture
COTS	Commercial Off-the-Shelf
DARO	Defense Airborne Reconnaissance Office
DCT	Discrete Cosine Transform
DE	Dissemination Element
DFAD	Digital Feature Analysis Data
DNC	Digital Nautical Chart
DPCM	Differential Pulse Code Modulation
DTED	Digital Terrain Elevation Data
DTOP	Digital Topographic Data
EPS	Enhanced Processing Segment
ESD	Exploitation Support Data
FTP	File Transfer Protocol
GFE	Government Furnished Equipment
GIAS	Geospatial and Imagery Access Services
GIF	Graphics Interchange Format
GIS	Geographic Information System
GMT	Greenwich Mean Time

GOTS	Government-Off-the-Shelf (GOTS)
HDBS	Host Data Base System
HTML	HyperText Markup Language
HTTP	Hypertext Transfer Protocol
IAS	Information Access Services
IDEX	Image Data Exploitation System
IDL	Interface Definition language
IEC	Integrated Exploitation Capability
IESS	Imagery Exploitation Support System
IFS	Image File Server
IIOP	Internet Inter-ORB Protocol
IP	Internet Protocol
IPA	Image Product Archive
IPC	Integrated Production Cell
IPL	Image Product Library
ISMC	Imagery Standards Management Committee
ISO	International Organization for Standardization
JIEO Organization	Joint Interoperability and Engineering
JITC	Joint Interoperability Test Center
JPEG	Joint Photographic Experts Group
JRD	Joint Requirements Document
JTA	Joint Technical Architecture
MINT	Multi-Source Intelligence Toolkit
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPEG	Motion Picture Experts Group
NCCB	NIMA Configuration Control Board
NES	NIMA Exploitation System
NIL	National Information Library
NIMA	National Imagery and Mapping Agency

NITF	National Imagery Transmission Format
NITFS	National Imagery Transmission Format Standards
NL	NIMA Library
OGE	Open Geospatial Exchange
OMG	Object Management Group
ORB	Object Request Broker
PIAE	Profile for Imagery Archives Extensions
SAR	Synthetic Aperture Radar
SDE	Support Data Extensions
TFRD	Tape Format Requirements Document
TIFF	Tagged Image File Format
TBD	To Be Determined
TBR	To Be Resolved
TIFF	Tagged Image File Format
UCOS	USIGS Common Object Specification
UIP	USIGS Interoperability Profile
URL	Uniform Resource Locator
USIGS	United States Imagery and Geospatial Information Service
USIGS CDM	USIGS Conceptual Data Model
UTA	USIGS Technical Architecture
UVMAP	Urban Vector Smart Map
VISP	Video Imagery Standards Profile
VITD	Vector Product Interim Terrain Data
VMAP	Vector Smart Map
WMED	World Mean Elevation Data
WVSPLUS	World Vector Shoreline Plus
WWW	World Wide Web

**APPENDIX 10****NITF HEADER/SUB-HEADER FORMATS****10.1 NITF Format Summary****10.1.1 Purpose/Scope**

The following tables represent a summary of NITF 2.0 file header and image subheader fields which are impacted by NITF version 2.1. The scope of the comparison is limited to single image products such as those that might be produced by commercial satellite enterprises. In subsequent sections, both NITF 2.0 and NITF 2.1 sub-header tables are presented for purposes of field-by-field comparisons. More information can be obtained in the NITFS Standards Compliance and Interoperability Certification Test and Evaluation Program Plan (DRAFT 5), dated 24 October 1997 and MIL-STD-2500B, the NITFS Version 2.1 document, dated 22 August 1997.

NITF File Header Comparison			
NITF Version 2.1		NITF Version 2.0	
FHDR	NITF02.10	FHDR	NITF02.00
CLEVEL	03,05,06,07	CLEVEL	01,02,03,04,05,06
STYPE	BF01	STYPE	4 Spaces
OSTAID	Orig. Station Identifier	OSTAID	Orig. Station Identifier
FDT	CCYYMMDDhhmmss	FDT	DDHHMMSSZMONYY
FTITLE	File Title	FTITLE	File Title
NOTE: Both NITF2.0 and NITF2.1 have 167 characters of security and classification information. The arrangement of the security fields for NITF2.1 has been altered to meet the requirements of the latest Executive Order for security and classification markings.			
FSCLAS (01)	T, S, C, R, or U	FSCLAS (01)	T, S, C, R, or U
FSCLSY (02)	US		
FSCODE (11)	Codewords	FSCODE (40)	Codewords
FSCTLH (02)	Cntrl & Handling Digraph	FSCTLH (40)	Cntrl & Handling
FSREL (20)	Rel Country Codes	FSREL (40)	Release Country Codes

<b>NITF File Header Comparison</b>			
<b>NITF Version 2.1</b>		<b>NITF Version 2.0</b>	
FSDCTP (02)	Declas Type Code DD,DE,GD,GE,O,X		
FSDCDT (08)	Declas Date		
FSDCXM (04)	Declas Exempt. Code		
FSDG (01)	S, C, R		
FSDGDT (08)	Downgrade Date		
FSCLTX (43)	Class. Text		
FSCATP (01)	Class. Authority Type: O, D		
FSCAUT (40)	Class. Authority	FSCAUT (20)	Class. Authority
FSCRSN (01)	Class. Reason codes, A-G		
FSSRDT (08)	Security Source Date		
FSCTLN (15)	Control Number	FSCTLN (20)	Control Number
		FSDWNG (6)	Downgrading Date
NOTE: End of Security Fields			
FSCOP	00000	FSCOP	00000
FSCPYS	00000	FSCPYS	00000
ENCRYP	0	ENCRYP	0
FBKGC	RGB values	FBKGC	RGB values
ONAME	Default spaces	ONAME	Default spaces
OPHONE	Default spaces	OPHONE	Default spaces
FL	Calculated	FL	Calculated
.....	.....	.....	.....
XHD	00000	XHD	00000

<b>NITF Image Sub-Header Comparison</b>			
<b>NITF Version 2.1</b>		<b>NITF Version 2.0</b>	
IM	IM	IM	IM
IID1	Non-blank identifier	IID	Non-blank identifier
IDATIM	CCYYMMDDhhmmss	IDATIM	DDHHMMSSZMONYY
TGTID	BBBBBBBBBBBOOOOC C	TGTID	BBBBBBBBBBBFFFFFCC

<b>NITF Image Sub-Header Comparison</b>			
<b>NITF Version 2.1</b>		<b>NITF Version 2.0</b>	
IID2 (80)	Image Title	ITITLE (80)	Image Title
NOTE: Both NITF2.0 and NITF2.1 have 167 characters of security and classification information. The arrangement of the security fields for NITF2.1 has been altered to meet the requirements of the latest Executive Order for security and classification markings. The security fields are not repeated here. See the layout of these fields in the file header.			
ENCRYP	0	ENCRYP	0
ISOURCE	Image Source	ISOURCE	Image Source
NROWS	1-99999999	NROWS	64-00065536
NCOLS	1-99999999	NCOLS	64-00065536
PVTYPE	INT, B, SI, R, C	PVTYPE	INT, B
IREP	MONO, RGB/LUT, RGB, YCbCr601, MULTI, NODISPLY	IREP	MONO, RGB/LUT, RGB, YCbCr601
ICAT	Image Category Code	ICAT	Image Category Code
ABPP	01,08,11-16,32,64	ABPP	01,08,11-16
PJUST	R	PJUST	R
ICORDS	U,G,N,S,D, spaces	ICORDS	U, G, C, or N
IGEOLO	Omit if prev spaces	IGEOLO	Omit if prev is N
NICOM	0	NICOM	0
IC	NC, C3, C5	IC	NC, C3, C5
COMRAT	00.0	COMRAT	00.0
NBANDS	1	NBANDS	1
IREPBANDnn	M, R, G, B, LU	IREPBANDnn	Two spaces
ISUBCATnn	Six Spaces	ISUBCATnn	Six Spaces
IFCnn	N	IFCnn	N
IMFLTnn	Three Spaces	IMFLTnn	Three Spaces
NLUTSnn	0	NLUTSnn	0
ISYNC	0	ISYNC	0
IMODE	B, P, R, S	IMODE	B, P, S
NBPR	0001-9999	NBPR	0001-0256
NBPC	0001-9999	NBPC	0001-0256
NPPBH	0002-8192	NPPBH	0002-8192
NPPBV	0002-8192	NPPBV	0032-8192
NBPP	01,08,12,16,32,64	NBPP	01,08,12,16

<b>NITF Image Sub-Header Comparison</b>			
<b>NITF Version 2.1</b>		<b>NITF Version 2.0</b>	
IDLVL	001-999	IDLVL	001-999
IALVL	000-998	IALVL	000-998
ILOC	rrrrcccccc	ILOC	rrrrcccccc
IMAG	1.0, /2, /4.....	IMAG	1.0, /2, /4.....
UDIDL	00000	UDIDL	00000
IXSHDL	00000	IXSHDL	00000

### 10.1.2 NITF 2.0 File Header Format

Table 10.1-1 contains additional implementation details supplementing information contained in the *National Imagery Transmission Format-Version 2.0 (MIL-STD-2500A)*, Table I.

**Table 10.1-1NITF 2.0 File Header Implementation for USIGS**

<b>Field</b>	<b>Description</b>	<b>Size</b>	<b>Value Range</b>	<b>Type</b>	<b>Value</b>	<b>Comment</b>	<b>A&amp;D LDM Attribute</b>
OSTAID	Originating Station ID	10	Alphanumeric	R	TBD	May not be all spaces BCS-A = Basic Character Set-Alphanumeric	DATASET Originating Station Identifier
FDT	File Date and Time	14	Alphanumeric	R	DDHHMMSSZMO NYY	00 - 59 indicate 2000 - 2059 60 - 99 indicate 1960 - 1999	
FTITLE	File Title	80	Alphanumeric	O			DATASET Title Text
FSCLAS	File Security Classification	1	T,S,C,R, or U	R	(Generated)	Based upon classification of file or per system high classification	SECURITY-Classification Code

<b>Field</b>	<b>Description</b>	<b>Size</b>	<b>Value Range</b>	<b>Type</b>	<b>Value</b>	<b>Comment</b>	<b>A&amp;D LDM Attribute</b>
FSCODE	File Codewords	40	Alphanumeric	O	(Generate d)	xxxxbyyyyyyy, where xxxx is security codeword; and b is an ASCII Space; and YYYYYYYY is control channel caveat based on classification of Symbol or per system high classification	SECURITY-CODEWORD Name
FSCTLH	File Control and Handling	40	Alphanumeric	O	(Generate d)	WWWWWWbZ, where WWWW is the Dissemination Restriction word (e.g. NOFORN, 6 ASCII Spaces); and b is an ASCII Space; and Z is the security indicator value, if any or space	DATASET-RESTRICTION Handling Description Text
FSREL	File Releasing Instructions	40	Alphanumeric	R	(Generate d)		DATASET-RESTRICTION Releasability Text
FSCAUT	File Classification Authority	20	Alphanumeric	O	DoD S-5210.51 (M-1)		DATASET-RESTRICTION Classification Authority text
FSCTLN	File Security Control Number	20	Alphanumeric	O	(Spaces)		IMAGE-PRODUCT Security Control Number Identifier
FSDWNG	File Security Downgrade	6	Alphanumeric	O	(Generate d)	If generated, the format will = YYMMDD, 999998, 999999	DATASET-RESTRICTION Downgrading Type Code

<b>Field</b>	<b>Description</b>	<b>Size</b>	<b>Value Range</b>	<b>Type</b>	<b>Value</b>	<b>Comment</b>	<b>A&amp;D LDM Attribute</b>
FSDEVT	File Downgrading Event	40	Alphanumeric	C	If present, It will=BCS-A	Alphanumeric if FSDWNG = 999998	DATASET-RESTRICTION Downgrading Event Text
ONAME	Originator's Name	27	Alphanumeric	O			DATASET Originator Identification Text
OPHONE	Originator's Phone Number	18	Alphanumeric	O			

See JIEO Circular 9008 for Segment Limitations

UDHDL	User Defined Header Data Length	5	0-99999	R			
UDHOFL	User Defined Header Overflow	3	0-999	C			
UDHD	User Defined Header Data	*	Registered Tagged Record Extensions	C			
XHDL	Extended Subheader Data Length	5	00000, 00003-08833	R	(Generated)		
XHD	Extended Subheader Data	*	Controlled Tagged Record Extensions	C	(Gen/omit)	If XHDL is other than 00000, this field MUST be present	

### 10.1.3 NITF 2.1 File Header Format

Table 10.1-2 contains additional implementation details supplementing information contained in the *National Imagery Transmission Format-Version 2.1 (MIL-STD-2500B)*., Table A-1.

**Table 10.1-2 NITF 2.1 File Header Implementation for USIGS**

Field	Description	Size	Value Range	Type	Value	Comment	A&D LDM Attribute
OSTAID	Originating Station ID	10	Alphanumeric	R	BCS-A	May not be all spaces	DATASET Originating Station Identifier
FDT	File Date and Time	14	Alphanumeric	R	CCYYMMDDhhmms		
FTITLE	File Title	80	Alphanumeric	RO	BCS-A	Default is all spaces	DATASET Title Text
FSCLAS	File Security Classification	1	T,S,C,R, or U	R	(Generated)	Based upon classification of Symbol or per system high classification	SECURITY-Classification Code
FSCLSY	File Security Classification System	2	Alphanumeric	R	Generated	Shall contain valid values indicating national or multi-national security systems	
FSCODE	File Codewords	11	Alphanumeric	R	(Generated)	Shall contain valid indicator of security compartments. Multiple entries shall be separated by single spaces	

<b>Field</b>	<b>Description</b>	<b>Size</b>	<b>Value Range</b>	<b>Type</b>	<b>Value</b>	<b>Comment</b>	<b>A&amp;D LDM Attribute</b>
FSCTLH	File Control and Handling	2	Alphanumeric	R	(Generate d)	This field shall contain valid additional security control and/or handling instructions (caveats) associated with the file. Values include digraphs found in DIAM 65-19 and/or Table A-4.	
FSREL	File Releasing Instructions	20	Alphanumeric	R	(Generate d)	This field shall contain a valid list of country and/or multilateral entity codes to which countries and /or multilateral entities the file is authorized for release.	DATASET-RESTRICTION Releasability Text
FSDCTP	Declas Type Code	2	Alphanumeric	R	DD, DE, GD, GE, O, X	This field shall contain a valid indicator of the type of security declassification or downgrading instructions which apply to the file.	
FSDCDT	Declassification Date	8	CCYYMMDD	R		Indicates the date on which a file is to be declassified	

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<b>Field</b>	<b>Description</b>	<b>Size</b>	<b>Value Range</b>	<b>Type</b>	<b>Value</b>	<b>Comment</b>	<b>A&amp;D LDM Attribute</b>
FSDCXM	File Declassification Exemption	4	Alphanumeric	R	X1 - X8, X251 – X259	Field indicates reason the file is exempt from automatic declassification if the value in File Declassification Type is X	
FSDG	File Downgrade	1	Alphanumeric	R	S, C, R	If field is all spaces, means that file security downgrading does not apply	
FSDGDT	File Downgrade Date	8	CCYYMMDD	R			
FSCLTX	File Classification Text	43	Alphanumeric	R		Field to be used to provide additional information about the file classification	
FSCATP	File Classification Authority Type	1	Alphanumeric	R	O, D, M	Indicates the type of authority used to classify the field.	
FSCAUT	File Classification Authority	20	Alphanumeric	O	DoD S-5210.51 (M-1)		DATASET-RESTRICTION Classification Authority text
FSCRSN	File Classification Reason	1	Alphanumeric	R	A-G or all spaces	These values correspond to the reasons for original classification per E.O. 12958	

<b>Field</b>	<b>Description</b>	<b>Size</b>	<b>Value Range</b>	<b>Type</b>	<b>Value</b>	<b>Comment</b>	<b>A&amp;D LDM Attribute</b>
FSSRDT	File Security Source Date	8	Alphanumeric	R	CCYYMM DD or all spaces	Date of the source used to derive the classification of the file	
FSCTLN	File Security Control Number	15	Alphanumeric	O	(Spaces)		IMAGE-PRODUCT Security Control Number Identifier
FBKGC	File Background Color	3	Unsigned Binary Integer	R	0x00-0xFF in Red, Green, Blue order		
ONAME	Originator's Name	24	Alphanumeric	R			DATASET Originator Identification Text
OPHONE	Originator's Phone Number	18	Alphanumeric	O			

See JIEO Circular 9008 for Segment Limitations

UDHDL	User Defined Header Data Length	5	0-99999	R			
UDHOFL	User Defined Header Overflow	3	0-999	C			
UDHD	User Defined Header Data	*	Registered Tagged Record Extensions	C			
XHDL	Extended Subheader Data Length	5	00000, 00003-08833	R	(Generated)		
XHD	Extended Subheader Data	*	Controlled Tagged Record Extensions	C	(Gen/omit)	If XHDL is other than 00000, this field MUST be present	

## 10.2 NITF Image Sub-Header Format

The information contained in the following tables represent differences between NITF 2.0 format and NITF 2.1 format

### 10.2.1 NITF 2.0 Image Sub-Header Format

Table 10.2-1 contains additional implementation details supplementing information contained in the *National Imagery Transmission Format-Version 2.0 (MIL-STD-2500A)*, Table III.

**Table 10.2-1 - NITF 2.0 Image Sub-Header Implementation for USIGS**

Field	Description	Size	Value Range	Type	Value	Comment	A&D LDM Attribute
IID	Image Identification Code	10	Alphanumeric	R	TBD	May not be all spaces	IMAGE-DATASET Image Identifier Text
IDATIM	Image Date and Time	14	Alphanumeric	R	DDHHMM SSZMONY Y	00 - 59 indicate 2000 - 2059 60 - 99 indicate 1960 - 1999	DATASET Observation Date
ITITLE	Image Title	80	Alphanumeric	R	Image ID		DATASET Title Text
ISCLAS	Symbol Security Classification	1	T,S,C,R, or U	R	(Generated )	Based upon classification of Image or per system high classification	SECURITY-CLASSIFICATION Code

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<b>Field</b>	<b>Description</b>	<b>Size</b>	<b>Value Range</b>	<b>Type</b>	<b>Value</b>	<b>Comment</b>	<b>A&amp;D LDM Attribute</b>
ISCODE	Symbol Codewords	40	Alphanumeric	O	(Generated )	xxxxbyyyyyyy, where xxxx is security codeword; and b is an ASCII Space; and YYYYYYYY is control channel caveat based on classification of Image or per system high classification	SECURITY-CODEWORD
ISCTLH	Symbol Control and Handling	40	Alphanumeric	O	(Generated )	WWWWWWbZ, where WWWW is the Dissemination Restriction word (e.g. NOFORN, 6 ASCII Spaces); and b is an ASCII Space; and Z is the security indicator value, if any or space	DATASET-RESTRICTION Handling Description Text
ISREL	Symbol Releasing Instructions	40	Alphanumeric	O	(Generated )		DATASET-RESTRICTION Releasability Text
ISCAUT	Symbol Classification Authority	20	Alphanumeric	O	DoD S-5210.51 (M-1)		DATASET-RESTRICTION Classification Authority Text
ISCTLN	Symbol Security Control Number	20	Alphanumeric	O	(Spaces)		IMAGE-DATASET Security Control Number Identifier
ISDWNG	Symbol Security Downgrade	6	Alphanumeric	O	(Generated )		DATASET-RESTRICTION Downgrading Type Code

Field	Description	Size	Value Range	Type	Value	Comment	A&D LDM Attribute
ISDEVT	Symbol Downgrading Event	40	Alphanumeric	C	(Omit)		DATASET- RESTRICTION Downgrading Event Text
See JIEO Circular 9008 for Image Specifications							
IXSHDL	Extended Subheader Data Length	5	00000, 00003- 08833	R	(Generated )		
IXSOFL	Extended Subheader Overflow	3	0-999	C	(Gen/omit)	If IXSHDL is other than 00000, this field MUST be present	
IXSHD	Extended Subheader Data	*	Controlled Tagged Record Extensions	C	(Gen/omit)		

### 10.2.2 NITF 2.1 Image Sub-Header Format

Table 10.2-2 contains additional implementation details supplementing information contained in the *National Imagery Transmission Format-Version 2.1 (MIL-STD-2500B)*, Table A-3.

**Table 10.2-2 - NITF 2.1 Image Sub-Header Implementation for USIGS**

Field	Description	Size	Value Range	Type	Value	Comment	A&D LDM Attribute
IID1	Image Identification Code	10	Alphanumeric	R	TBD		IMAGE-DATASET Image Identifier Text

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<b>Field</b>	<b>Description</b>	<b>Size</b>	<b>Value Range</b>	<b>Type</b>	<b>Value</b>	<b>Comment</b>	<b>A&amp;D LDM Attribute</b>
IDATIM	Image Date and Time	14	Alphanumeric	R	CCYYMMDD Dhhmmss		DATASET Observation Date
TGTID	Target ID	17	Alphanumeric	R	BBBBBBBB BBBFFFFF CC	10 characters of BE 5 characters of primary key (OSUFFIX) 2 character country code	
IID2	Image IID2	80	Alphanumeric	R	Image ID		DATASET Title Text
ISCLAS	Symbol Security Classification	1	T,S,C,R, or U	R	(Generated)	Based upon classification of Image or per system high classification	SECURITY-CLASSIFICATION Code
ISCLSY	Image Security Classification System	2	Alphanumeric	R	Generated	Shall contain valid values indicating the national or multinational security system used to classify the image	
ISCODE	Image Codewords	11	Alphanumeric	O	(Generated)	Values include one or more of the tri/digraphs found in DIAM 65-19 and/or Table A-4.	SECURITY-CODEWORD
ISCTLH	Image Control and Handling	2	Alphanumeric	O	(Generated)	Values include digraphs found in DIAM 65-19 and/or Table A-4.	DATASET-RESTRICTION Handling Description Text

<b>Field</b>	<b>Description</b>	<b>Size</b>	<b>Value Range</b>	<b>Type</b>	<b>Value</b>	<b>Comment</b>	<b>A&amp;D LDM Attribute</b>
ISREL	Image Releasing Instructions	20	Alphanumeric	O	(Generated)	Valid items in the list are one or more country codes as found in FIPS 10-4 and/or codes identifying multilateral entities as found in DIAM 65-19	DATASET-RESTRICTION Releasability Text
ISDCTP	Image Declassification Type	2	Alphanumeric	O	DD, DE, GD, GE, O, X		
ISDCDT	Image Declassification Date	8	Alphanumeric	O	CCYYMMDD		
ISDCXM	Image Declassification Exemption	4	Alphanumeric	O	X1-X8, X251-X259		
ISDG	Image Downgrade	1	Alphanumeric	O	S, C, R		
ISDGDT	Image Downgrade Date	8	Alphanumeric	O	CCYYMMDD		
ISCLTX	Image Classification Text	43	Alphanumeric	O		Used to provide additional information about image classification to include identification of a declassification or downgrading event	
ISCATP	Image Classification Authority Type	1	Alphanumeric	O	O, D, M		

<b>Field</b>	<b>Description</b>	<b>Size</b>	<b>Value Range</b>	<b>Type</b>	<b>Value</b>	<b>Comment</b>	<b>A&amp;D LDM Attribute</b>
ISCAUT	Image Classification Authority	40	Alphanumeric	O	DoD S-5210.51 (M-1)		DATASET-RESTRICTION Classification Authority Text
ISCRSN	Image Classification Reason	1	Alphanumeric	O	A-G	Contains values indicating reasons for classifying the image	
ISSRDT	Image Security Source Date	8	Alphanumeric	O	CCYYMMDD		
ISCTLN	Image Security Control Number	20	Alphanumeric	O	(Spaces)		IMAGE-DATASET Security Control Number Identifier

See JIEO Circular 9008 for Image Specifications

IREP	Image Representation	8	Alphanumeric	R	MONO, RGB/LUT, RGB, 1D, 2D, 3D, ND, MULTI, YCbCr601		
ICORDS	Image Coordinate System	1	Alphanumeric	O	U, G, N, S, D	NITF 2.1 uses a space to indicate no IGEOLO field follows. For NITF 2.1, the value 'N' indicates that the IGEOLO will have corner UTM coordinates in the Northern Hemisphere	
IGEOLO	Image Geographic Location	60	Alphanumeric	C	Decimal degrees	Definition and coordinates dictated by value in ICORDS field	

<b>Field</b>	<b>Description</b>	<b>Size</b>	<b>Value Range</b>	<b>Type</b>	<b>Value</b>	<b>Comment</b>	<b>A&amp;D LDM Attribute</b>
IREPBANDnn	Nnth Band Representation	2	Alphanumeric	C		Field shall contain valid indicator of the interpretation of the nnth band. The band number is a positive integer when IREP contains MULTI. In all other cases, the use of this field is user defined.	
IMODE	Image Mode	1	Alphanumeric	R	B, P, R, S	'R' value is added to represent interleaved by row	
IXSHDL	Extended Subheader Data Length	5	00000, 00003-08833	R	(Generated)		
IXSOFL	Extended Subheader Overflow	3	0-999	C	(Gen/omit)	If IXSHDL is other than 00000, this field MUST be present	
IXSHD	Extended Subheader Data	*	Controlled Tagged Record Extensions	C	(Gen/omit)		

## 10.3 NITF Symbol/Graphics Sub-Header Format

The information contained in the following tables represent differences between NITF 2.0 format and NITF 2.1 format. For this particular sub-header, there are no differences. For NITF 2.1, the Symbol Sub-Header name has been changed to the Graphics Sub-Header.

### 10.3.1 NITF 2.0 Symbol Sub-Header Format

Table 10.3-1 contains implementation details supplementing information contained in the *National Imagery Transmission Format-Version 2.0 (MIL-STD-2500A)*, Table VI.

**Table 10.3-1 NITF 2.0 Symbol Sub-Header Implementation for USIGS**

<b>Field</b>	<b>Description</b>	<b>Size</b>	<b>Value Range</b>	<b>Type</b>	<b>Value</b>	<b>Comment</b>	<b>A&amp;D LDM Attribute</b>
SY	File Part Type	2	SY	R	SY		
SID	Symbol Id	10	Alphanumeric	R			
SNAME	Symbol Name	20	Alphanumeric	O			
SSCLAS	Symbol Security Classification	1	T,S,C,R, or U	R	(Generated)	Based upon classification of Symbol or per system high classification	

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<b>Field</b>	<b>Description</b>	<b>Size</b>	<b>Value Range</b>	<b>Type</b>	<b>Value</b>	<b>Comment</b>	<b>A&amp;D LDM Attribute</b>
SSCODE	Symbol Codewords	40	Alphanumeric	O	(Generated)	xxxxbyyyyyyy, where xxxx is security codeword; and b is an ASCII Space; and YYYYYYYY is control channel caveat based on classification of Symbol or per system high classification	
SSCTLH	Symbol Control and Handling	40	Alphanumeric	O	(Generated)	WWWWWWbZ, where WWWW is the Dissemination Restriction word (e.g. NOFORN, 6 ASCII Spaces); and b is an ASCII Space; and Z is the security indicator value, if any or space	
SSREL	Symbol Releasing Instructions	40	Alphanumeric	O	(Generated)		
SSCAUT	Symbol Classification Authority	20	Alphanumeric	O	DoD S-5210.51 (M-1)		
SSCTLN	Symbol Security Control Number	20	Alphanumeric	O	(Spaces)		
SSDWNG	Symbol Security Downgrade	6	Alphanumeric	O	(Generated)		
SSDEVT	Symbol Downgrading Event	40	Alphanumeric	C	(Omit)		

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Field	Description	Size	Value Range	Type	Value	Comment	A&D LDM Attribute
STYPE	Symbol Type	1	B for bit-mapped; C for CGM; O for Object	R	(Generated)	CGM recommended for all symbol and label implementations	
See JIEO Circular 9008 for Symbol Specifications							

### 10.3.2 NITF 2.1 Graphic Sub-Header Format

Table 10.3-2 contains implementation details supplementing information contained in the *National Imagery Transmission Format-Version 2.1 (MIL-STD-2500B)*, Table A-5.

**Table 10.3-2 NITF 2.1 Graphic Sub-Header Implementation for USIGS**

Field	Description	Size	Value Range	Type	Value	Comment	A&D LDM Attribute
SY	File Part Type	2	SY	R	SY		
SID	Graphic Id	10	Alphanumeric	R			
SNAME	Graphic Name	20	Alphanumeric	O			
SSCLAS	Graphic Security Classification	1	T,S,C,R, or U	R	(Generated)	Based upon classification of Symbol or per system high classification	
SSCLSY	Graphics Security Classification System	2	Alphanumeric	O		Field shall contain valid values indicating the national or multinational security system used to classify the graphic.	

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<b>Field</b>	<b>Description</b>	<b>Size</b>	<b>Value Range</b>	<b>Type</b>	<b>Value</b>	<b>Comment</b>	<b>A&amp;D LDM Attribute</b>
SSCODE	Graphic Codewords	11	Alphanumeric	O	(Generated)	xxxxbyyyyyyy, where xxxx is security codeword; and b is an ASCII Space; and YYYYYYYY is control channel caveat based on classification of Symbol or per system high classification	
SSCTLH	Graphic Control and Handling	2	Alphanumeric	O	(Generated)	WWWWWWbZ, where WWWW is the Dissemination Restriction word (e.g. NOFORN, 6 ASCII Spaces); and b is an ASCII Space; and Z is the security indicator value, if any or space	
SSREL	Graphic Releasing Instructions	20	Alphanumeric	O	(Generated)		
SSDCTP	Graphic Declassification Type	2	Alphanumeric	O	DD, DE, GD, O, X		
SSDCDT	Graphic Declassification Date	8	Alphanumeric	R	CCYYMMDD		
SSDCXM	Graphic Declassification Exemption	4	Alphanumeric	O	X1-X8, X251-X259		

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<b>Field</b>	<b>Description</b>	<b>Size</b>	<b>Value Range</b>	<b>Type</b>	<b>Value</b>	<b>Comment</b>	<b>A&amp;D LDM Attribute</b>
SSDG	Graphic Downgrade	1	Alphanumeric	O	S, C, R	Field indicates graphic downgrade if the values in Graphic Declassification Type are GD or GE	
SSDGDT	Graphic Downgrade Date	8	Alphanumeric	R	CCYYMMDD		
SSCLTX	Graphic Classification Text	43	Alphanumeric	O		Used to identify multiple classification sources	
SSCATP	Graphic Classification Authority Type	1	Alphanumeric	O	O, D, M		
SSCAUT	Symbol Classification Authority	40	Alphanumeric	O	DoD S-5210.51 (M-1)		
SSCRSN	Graphic Classification Reason	1	Alphanumeric	O	A-G		
SSSRDT	Graphic Security Source Date	8	Alphanumeric	R	CCYYMMDD		
SSCTLN	Graphic Security Control Number	15	Alphanumeric	O	(Spaces)		
STYPE	Graphic Type	1	B for bit-mapped; C for CGM; O for Object	R	(Generated)	CGM recommended for all symbol and label implementations	
See JIEO Circular 9008 for Symbol Specifications							

## 10.4 NITF Text Sub-Header Format

The information contained in the following tables represent differences between NITF 2.0 format and NITF 2.1 format. For this particular sub-header, there are no differences.

### 10.4.1 NITF 2.0 Text Sub-Header Format

Table 10.4-1 contains implementation details supplementing information contained in the *National Imagery Transmission Format-Version 2.0 (MIL-STD-2500A)*, Table XIII.

**Table 10.4-1 NITF 2.0 Text Sub-Header Implementation for USIGS**

Field	Description	Size	Value Range	Type	Value	Comment	A&D LDM Attribute
TE	File Part Type	2	TE	R	TE		
TEXTID	Text Id	10	Alphanumeric	R			
TXTDT	Text Date and Time	14	Alphanumeric	R	DDHHMMSS ZMONYY	00 - 59 indicate 2000 - 2059 60 - 99 indicate 1960 - 1999	
TXTTITL	Text Title	80	Alphanumeric	O	(Generated)		
TSCLAS	Text Security Classification	1	T,S,C,R, or U	R	(Generated)	Based upon classification of Text or per system high classification	

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<b>Field</b>	<b>Description</b>	<b>Size</b>	<b>Value Range</b>	<b>Type</b>	<b>Value</b>	<b>Comment</b>	<b>A&amp;D LDM Attribute</b>
TSCODE	Text Codewords	40	Alphanumeric	O	(Generated)	xxxxbyyyyyyy, where xxxx is security codeword; and b is an ASCII Space; and YYYYYYYY is control channel caveat based on classification of Symbol or per system high classification	
TSCTLH	Text Control and Handling	40	Alphanumeric	O	(Generated)	WWWWWWbZ, where WWWW is the Dissemination Restriction word (e.g. NOFORN, 6 ASCII Spaces); and b is an ASCII Space; and Z is the security indicator value, if any or space	
TSREL	Text Releasing Instructions	40	Alphanumeric	O	(Generated)		
TSCAUT	Text Classification Authority	20	Alphanumeric	O	DoD S-5210.51 (M-1)		
TSCTLN	Text Security Control Number	20	Alphanumeric	O	(Generated)		
TSDWNG	Text Security Downgrade	6	Alphanumeric	O	(Generated)	Consistent with OADR /Note	C
TSDEVT	Text Downgrading Event	40	Alphanumeric	C	Generated)		
TXTFMT	Text Format	3	JTC, STA, OTH	R	STA	ASCII to be used for all text	

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Field	Description	Size	Value Range	Type	Value	Comment	A&D LDM Attribute
See JIEO Circular 9008 for Text Specifications							

#### 10.4.2 NITF 2.1 Text Sub-Header Format

Table 10.4-2 contains implementation details supplementing information contained in the *National Imagery Transmission Format-Version 2.1 (MIL-STD-2500B)*, Table A-6.

**Table 10.4-2 NITF 2.1 Text Sub-Header Implementation for USIGS**

Field	Description	Size	Value Range	Type	Value	Comment	A&D LDM Attribute
TE	File Part Type	2	TE	R	TE		
TEXTID	Text Id	10	Alphanumeric	R			
TXTDT	Text Date and Time	14	Alphanumeric	R	CCYYMMDD hhmmss		
TXTTITL	Text Title	80	Alphanumeric	O	(Generated)		
TSCLAS	Text Security Classification	1	T,S,C,R, or U	R	(Generated)	Based upon classification of Text or per system high classification	
TSCLSY	Text Security Classification system	2	Alphanumeric	O		Field contains valid values indicating the national or multinational security system used to classify the text.	

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<b>Field</b>	<b>Description</b>	<b>Size</b>	<b>Value Range</b>	<b>Type</b>	<b>Value</b>	<b>Comment</b>	<b>A&amp;D LDM Attribute</b>
TSCODE	Text Codewords	11	Alphanumeric	O	(Generated)	Field contains valid indicator of the security compartments associated with the text	
TSCTLH	Text Control and Handling	2	Alphanumeric	O	(Generated)	Field contains valid additional security control and/or handling instructions (caveats) associated with the text	
TSREL	Text Releasing Instructions	20	Alphanumeric	O	(Generated)		
TSDCTP	Text Declassification Type	2	Alphanumeric	O	DD, DE, GD, GE, O, X		
TSDCDT	Text Declassification Date	8	Alphanumeric	O	CCYYMMDD		
TSDCXM	Text Declassification Exemption	4	Alphanumeric	O	X1-X8, X251-X259		
TSDG	Text Downgrade	1	Alphanumeric	O	S, C, R	This field depends on whether Text Declassification Type contains a GD or GE	
TSDGDT	Text Downgrade Date	8	Alphanumeric	R	CCYYMMDD		
TSCLTX	Text Classification Text	43	Alphanumeric	O		Values are user defined free text	

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<b>Field</b>	<b>Description</b>	<b>Size</b>	<b>Value Range</b>	<b>Type</b>	<b>Value</b>	<b>Comment</b>	<b>A&amp;D LDM Attribute</b>
TSCATP	Text Classification Authority Type	1	Alphanumeric	O	O, D, M		
TSCAUT	Text Classification Authority	40	Alphanumeric	O	DoD S-5210.51 (M-1)		
TSCRSSN	Text Classification Reason	1	Alphanumeric	O	A - G		
TSSRDT	Text Security Source Date	8	Alphanumeric	R	CCYYMMDD		
TSCTLN	Text Security Control Number	15	Alphanumeric	O	(Generated)		
TXTFMT	Text Format	3	JTC, STA, OTH	R	STA	ASCII to be used for all text	
See JIEO Circular 9008 for Text Specifications							

## 10.5 NITF Label Sub-Header Format

The information contained in the following tables represent differences between NITF 2.0 format and NITF 2.1 format. For NITF 2.1, this particular sub-header has been eliminated.

### 10.5.1 NITF 2.0 Label Sub-Header Format

Table 10.5-1 contains implementation details supplementing information contained in the *National Imagery Transmission Format-Version 2.0 (MIL-STD-2500A)*, Table XI.

**Table 10.5-1 NITF 2.0 Label Sub-Header Implementation for USIGS**

Field	Description	Size	Value Range	Type	Value	Comment	A&D LDM Attribute
LA	File Part Type	2	LA	R	LA		
LID	Label Id	10	Alphanumeric	R			
LSCLAS	Label Security Classification	1	T,S,C,R, or U	R	(Generated)	Based upon classification of Label or per system high classification	
LSCODE	Label Codewords	40	Alphanumeric	O	(Generated)	xxxxbyyyyyyy, where xxxx is security codeword; and b is an ASCII Space; and YYYYYYYY is control channel caveat based on classification of Symbol or per system high classification	

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<b>Field</b>	<b>Description</b>	<b>Size</b>	<b>Value Range</b>	<b>Type</b>	<b>Value</b>	<b>Comment</b>	<b>A&amp;D LDM Attribute</b>
LSCTLH	Label Control and Handling	40	Alphanumeric	O	(Generated)	WWWWWWbZ, where WWWW is the Dissemination Restriction word (e.g. NOFORN, 6 ASCII Spaces); and b is an ASCII Space; and Z is the security indicator value, if any or space	
LSREL	Label Releasing Instructions	40	Alphanumeric	O	(Generated)		
LSCAUT	Label Classification Authority	20	Alphanumeric	O	DoD S-5210.51 (M-1)		
LSCTLN	Label Security Control Number	20	Alphanumeric	O	(Spaces)		
LSDWNG	Label Security Downgrade	6	Alphanumeric	O	(Generated)		
LSDEVT	Label Downgrading Event	40	Alphanumeric	C	(Omit)		
See JIEO Circular 9008 for Label Specifications							

### **10.5.2 NITF 2.1 Label Sub-Header Format**

This Sub-Header format has been eliminated for NITFS 2.1

**APPENDIX 20****SCENARIOS AND USE CASES (TBD-027)**

[Note: Intent of this section is to provide background information on how it is envisioned that the interfaces will be used. Future releases of the UIP will integrate appropriate scenarios with the interface definitions to demonstrate application of the interfaces.]

**20.1 Image Assessment and Geopositioning**

The following describes the scenario for the Image Assessment and Geopositioning flow, from the delivery of Imagery and Support Data from External Segments, through adjustment by the Front End Processing Environment, to Exploitation. The scenario refers to the following modified USIGS architecture diagrams for Effectivities 2.5, 3.5 & 4.5. The first implementation of UIP compliant interfaces for exchange of Geospatial Imagery and Support Data will occur in the USIGS 2.5 timeframe, although not all interfaces will be compliant at this time. Tables 20-2.5, 20-3.5 & 20-4.5, therefore will include duplicate-numbered lines for some interfaces to show the transition from a non-compliant to a compliant interface.

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**Table 20.1 USIGS E2.5 Image Assessment and Geopositioning Data Flows**

Step	Data Item	Generator/Sender	User/Preserver	Interface Channel	UIP
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1	Nomination	Operational (G)	RMS (U)	RMS Terminal	N
2	Status	RMS (G)	GOB (U), DPF (U)	External Electronic	N
3	TFRD Imagery	DPF (G)	DS/S (P, U)	D2C	N
4	MSD	GOB (G)	SA/S (U)	External Electronic	N
5	MMSD	SA/S (G)	FPE (U)	9 track	N
6	IDF & ASD	SA/S (G)	FPE (U)	DIS (DS/S pass-thru)	N
6	AMSD	SA/S (S)	FPE (U)	9 track	N
7	R0 Full Image	DS/S (S)	FPE (U)	D2C	N
8	R0 Patches, R2 Full Image	DS/S (G)	FPE (U)	DIS	N
9	WMED/DTED	DPDW (S)	FPE (U)	CD-ROM	N
10	SPPC	FPE (G)	FPE (U)	Internal	N
10	SPPC	FPE (G)	SP/S (U)	9-track	N
11	AMSD	FPE (G)	SA/S (P)	9-track	N
12	USMSD	FPE (G)	DECAlpha, IEC (U)	8 mm	N
13	Ortho Imagery	FPE (G)	DCAFE (U)	8mm	N
14	IDF & ASD	SA/S (S)	DECAlpha, IEC(U)	DIS	N
15	R0-R5 Full Image	DS/S (G)	DECAlpha, IEC(U)	FDDI	N
16	UIAF	FPE	DECAlpha, IEC	8 mm	N

		(TBR) (U)		
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**Table 20.2 USIGS E3.5 Image Assessment and Geopositioning Data Flows**

Step	Data Item	Generator/Sender	User/Preserver	Interface Channel	UIP
1	Nomination	Operational (G)	RMS (U)	RMS Terminal	N
2	Status	RMS (G)	GOB (U), DPF (U)	External Electronic	N
3	TFRD Imagery	DPF (G)	DS/S (P, U)	D2C	N
3	TFRD Imagery	DPF (G)	NL (P, U)	D2C	N
4	MSD	GOB (G)	NL (U)	External Electronic	N
4	RMSD	GOB (G)	NL (U)	External Electronic	N
5	MMSD	NL (G)	FPE (U)	Direct GIAS	Y
5	RMMSD	NL (G)	FPE (U)	Direct GIAS	Y
6	IDF & ASD	SA/S (G)	FPE (U)	DIS (DS/S pass-	Y

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				thru)	
6	AMSD	SA/S (S)	FPE (U)	9 Track	N
6	AMSD	NL (S)	FPE (U)	Direct GIAS	Y
6	USMSD	NL (S)	FPE (U)	Direct GIAS, USMSD API	Y
7	R0 Full Image	DS/S (S)	FPE (U)	D2C	N
7	R2 Full Image	NL (G)	FPE (U)	Direct GIAS	Y
8	R0 Patches	DS/S (G)	FPE (U)	DIS	Y
8	R0 Patches	NL (G)	FPE (U)	Direct GIAS	Y
9	WMED/DTED	DPDW (S)	FPE (U)	CD-ROM	N
10	SPPC	FPE (G)	FPE (U)	Internal	Y
11	AMSD	FPE (G)	SA/S (P)	9-track	Y
11	AMSD	FPE (G)	NL (P)	Direct GIAS	Y
12	USMSD & UIAF	FPE (G)	NL (P)	Direct GIAS	Y
13	Ortho Imagery	FPE (G)	NL (P)	Direct GIAS	Y
13a	Ortho Imagery	NL (S)	DCAFE (U)	Info Access (TBR)	Y
14	USMSD	NL (S)	DECAlpha, IEC(U)	USMSD API	Y
15	R0-R5 Full Image	NL (G)	DECAlpha, IEC(U)	Info Access (TBR)	Y
16	UIAF	NL (P)	DECAlpha	Info Access (TBR)	Y

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**Table 20.3 USIGS E4.5 Image Assessment and Geopositioning Data Flows**

Step	Data Item	Generator/Sender	User/Preserver	Interface Channel	UIP
1	Nomination	Operational (G)	RMS (U)	RMS Terminal	N
2	Status	RMS (G)	GOB (U), DPF (U)	External Electronic	N
3	TFRD Imagery	DPF (G)	NL (P, U)	D2C	N
4	MSD	GOB (G)	NL (U)	External Electronic	N
4	RMSD	GOB (G)	NL (U)	External Electronic	N
5	MMSD	NL (G)	FPE (U)	Direct GIAS	Y
5	RMMSD	NL (G)	FPE (U)	Direct GIAS	Y
6	AMSD	NL (S)	FPE (U)	Direct GIAS	Y
6	USMSD	NL (S)	FPE (U)	Direct GIAS, USMSD API	Y
7	R2 Full Image	NL (G)	FPE (U)	Direct GIAS	Y
8	R0 Patches	NL (G)	FPE (U)	Direct GIAS	Y
9	WMED/DTED	DPDW (S)	FPE (U)	CD-ROM	N
10	SPPC	FPE (G)	FPE (U)	Internal	Y
11	AMSD (TBR)	FPE (G)	NL (P)	Direct GIAS	Y
12	USMSD & UIAF	FPE (G)	NL (P)	Direct GIAS	Y
13	Ortho Imagery	FPE (G)	NL (P)	Direct GIAS	Y

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13a	Ortho Imagery	NL (S)	DCAFE (U)	Info Access (TBR)	Y
14	USMSD	NL (S)	DECAAlpha, IEC(U)	USMSD API	Y
15	R0-R5 Full Image	NL (G)	DECAAlpha, IEC(U)	Info Access (TBR)	Y
16	UIAF	NL (P)	DECAAlpha	Info Access (TBR)	Y

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**APPENDIX 30****RECOMMENDED PRACTICES AND CLARIFICATION INFORMATION**

[Note: Intent of this section is to provide additional or clarifying information on specific interfaces, methods, or files (e.g., formats, products, data types, etc...) to assist USIGS implementation developers. Interpretations, recommended procedures, or clarifications are provided as value-added to the limiting structure of section 4 & 5 and of the tables therein.]

**30.1 UCO::DAG Description and Values**

The UCO::DAG information is redundant to several tables in section 4.3.1.1. The information provided is intended to provide clarification beyond that in the tables which are limited due to the table formats.

30.1.1 The following is provided to assist in understanding the UCO::DAG contents in the context and structure of the tables in section 4.3.1.1. Instead of replicating it, the tables will point to this section of Appendix 30. The GIAS reflects cardinality of the OrderDAG, i.e., 0-n: for products where IAS uses 0 for custom orders; 0-1 for alteration spec; 1-n for media types; and 0-n for destinations.

**Table 30.1.1-1**

<b>Metho d</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
	<b>Order</b>	UCO::DAG Contains the following nodes:	The 'Order' DAG structure is defined in GIAS and is replicated several times throughout this section. The contents of the "type" and "Desc/Value(s)" columns are provided in Appendix 30, section 30.1.
		• UID::Product	Product object reference (The product RECORD node cardinality is 1..n because you must have a product object reference to order a product)
		• AlterationSpec	Desired format and compression (where applicable) for Product: Format, compression, bit per pixel and recommended algorithms as defined in GIAS section 2.2.2.2 and the A&D LDM for available Alteration Specs (defined in data dictionary - ORDER-PRODUCT-

<b>Metho d</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
			ALTERATION) Null set value indicates that the: - bpp=0 represents no change - Georegion null is 0, 0, 0, 0
		-ProductFormat <string>	As defined in A&D LDM: DATASET-AVAILABLE- FORMAT: FILE-FORMAT Code (FK)
		-ImageFormat <string>	
		-Compression <string>	As defined in A&D LDM: DATASET-AVAILABLE- COMPRESSION: FILE-COMPRESSION Code (FK) With the added FILE-COMPRESSION-Codes: NC (Not Compressed) JPEG8C3Q5 (8 bit C3 Quality 5) JPEG12C3L (12 bit C3 Low) JPEG12C3H (12 bit C3 High)
		-BitsPerPixel <string>	As defined in A&D LDM: DATASET-AVAILABLE- BIT-PER-PIXEL: DATASET-AVAILABLE-BIT-PER- PIXEL QTY  bpp=0 represents no change
		-Algorithm <string>	As defined in DATASET-AVAILABLE- CONVERSION: DATASET-AVAILABLE- CONVERSION Algorithm Name
		-RsetList sequence < short >	Reduced Resolution Data Set(s) as defined in the A&D LDM DATASET-AVAILABLE-REDUCED- RESOLUTION: DATASET-AVAILABLE-REDUCED- RESOLUTION Rate where Rate =0   1   2   3   4   5   6   7  An Empty RsetList means include all available rsets
		-GeoRegion	Defines geographic subset or "chip" [optional]  As defined in GIAS.  GeoRegion null is 0, 0, 0, 0 which means return the entire image.
		-GeoRegionType	Defines three different types of geo-regions, two line sample types and lat_lon in decimal degrees.. See Appendix 30, section 30.1.2)

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
		<ul style="list-style-type: none"> <li>• InformationSystemName &lt;string&gt;</li> </ul>	As defined in A&D LDM INFORMATION-SYSTEM Name (FK) where System name refers to system containing desired Product. Optional where cardinality is (0..1).
		<ul style="list-style-type: none"> <li>• Originator &lt;string&gt;</li> </ul>	UserID of person or system submitting order. Supplied by client. Optional where cardinality is (0..1).
		<ul style="list-style-type: none"> <li>• PackagingSpec</li> </ul>	Supplied by client
		-package_identifier <string>	An identifier for the package so the client can identify the package when it arrives
		<ul style="list-style-type: none"> <li>- packaging_format_and_compression &lt;string&gt;</li> </ul>	<p>Requested format and compression for ordered Product(s) in accordance with the packaging options defined in the A&amp;D LDM (listed in data dictionary - ORDER-PACKAGING-SPECIFICATION Compression Code). See clarification of format types in Appendix 30, section 30.1.3:</p> <p>“TARUNC”        “FILEUNC”        “GBSUNC”        “TARZIP”        “FILEZIP”        “GBSZIP”        “TARGZIP”        “FILEGZIP”        “GBSGZIP”        “TARCOMPRESS”        “FILECOMPRESS”        “GBSCOMPRESS”</p>
		<ul style="list-style-type: none"> <li>• Destination</li> </ul>	
		<ul style="list-style-type: none"> <li>-for FTP <b>UCO::FileLocation</b></li> </ul>	<p>Note: If file_name is blank, indicates directory destination for multiple files. Unless stated otherwise in Section 4.4, files will be named as :</p> <p>“package_identifier.xx.yy” where .xx = sequential file number and .yy = total number of files</p>
		<ul style="list-style-type: none"> <li>-for e-mail <b>UCO::EmailAddress</b></li> </ul>	<p>As defined in UCOS.</p> <p>Unless stated otherwise in Section 4.4, file(s) will be</p>

<b>Method</b>	<b>Return/ Parameter</b>	<b>Type</b>	<b>Desc/Value(s)</b>
			attached and names as: “package_identifier.xx.yy” where .xx = sequential file number and .yy = total number of files
		• Receiver <string>	UserID of person or system receiving order.
		• MediaType <string>	As defined in the A&D LDM for available Media Types supported by the server. (9 values are listed in data dictionary - MEDIA-TYPE Code).
		• TailoringSpec	Not Used (where cardinality is (0..1))
		• OrderPriority <short>	Priority to be assigned to this order. Optional where cardinality is (0..1)
		• Note <string>	Optional where cardinality is (0..1)

### 30.1.2 Rectangle and Related Definitions Clarification

This material provides more complete definitions of the UCO:Rectangle and related data types. These data types are used in GIAS interfaces in several places, including:

1. The GIAS:GeoRegion data type is used in the GIAS:AlterationSpec data type that is used by the GIAS:OrderMgr and GIAS:StandingOrderMgr interface classes. The GIAS:GeoRegion data type is defined as being the same as the UCO:Rectangle data type. The UCO:Rectangle data type is defined as a data structure containing two instances of the UCO:Coordinate2d data type, named the “upper left” and “lower right” corners of a rectangle. The UCO:Coordinate2d data type contains two values, named “x” and “y”.
2. The GIAS:GeoRegion data type is used (in the GIAS:AlterationSpec) with the GIAS:GeoRegionType data quantity, that currently has three possible values: LINE\_SAMPLE\_FULL, LINE\_SAMPLE\_CHIP, and LAT\_LON. For the LINE\_SAMPLE\_FULL value, the GeoRegion is specified in image coordinates in the full resolution (R0) image. For the LINE\_SAMPLE\_CHIP value, the GeoRegion is in image coordinates in a Chippable Image provided by the Library. For the LAT\_LON value, the GeoRegion is in ground coordinates, currently always in the WGS-84 coordinate system.
3. The UCOS defines several other data types that use UCO:Coordinate2d, including UCO:Polygon, UCO:LineString, UCO:Circle, and UCO:Ellipse.
4. The GIAS:CatalogAccessMgr and GIAS:StandingQueryMgr interface classes use queries encoded in the Boolean Query Syntax (BQS). This BQS uses data structures with the same basic contents as

UCO:Rectangle, UCO:Polygon, UCO:LineString, UCO:Circle, and UCO:Ellipse. These data structures use latitude and longitude ground coordinates, sometimes with a single numerical value for latitude or longitude. A “Rectangle” is specified by the “upper left” and “lower right” corners of the rectangle. These ground coordinates are currently always in the WGS-84 coordinate system.

5. The A&D LDM uses the UCO:Rectangle data type for certain metadata elements, including DATASET Minimum Bounding Rectangle, IMAGERY-AREA-TARGET-MAP-CHART-GEOESY Minimum Bounding Rectangle, and ORDER-PRODUCT-ALTERATION Sub Section Rectangle.
6. The A&D LDM uses the UCO:Polygon data type for several metadata elements, such as DATASET-BOUNDING-POLYGON Polygon.
7. The A&D LDM uses the UCO:Coordinate2d type for at least one metadata element: POINT Coordinate. The POINT metadata entity is then used in a variety of other metadata entities, such as IMAGE-DATASET Center Point and IMAGERY-POINT-TARGET.

The meanings of values of “x” and “y” in the UCO:Coordinate2d data type (and in the UCO:Coordinate3d data type) are not currently specified in the UCOS or GIAS documents. Similarly, the meanings of the “upper left” and “lower right” corners of a rectangle are not currently specified in those documents. The following sections provide definitions of these data types as build by the NIMA Library in E2.0, when they are used for image coordinates and for ground coordinates.

### 30.1.2.1 Image Coordinates

When image coordinates are being used, the values of “x” and “y” in the data type UCO:Coordinate2d are interpreted to mean:

1. The terms used below for the two image pixel indices are “row” and “column” (as used in the NITF and not dependent on the image sensor technology). For NTM images, row number is synonymous with “line” number, and column is synonymous with “sample” number.
2. The reference point for image coordinates is the corner of the (full, chippable, or partial) image where the row and column pixel indices are (0, 0). Row and column pixel indices of (0.00, 0.00) apply to the outside corner of this corner pixel (not to the center of this pixel).
3. The pixel column index is used for the “x” image coordinate value, and the pixel row index is used for the “y” coordinate.
4. The row and column pixel indices (or “y” and “x”) are in pixel spacing (or pixel) units in the referenced (full resolution, chippable, or reduced resolution) image. (These indices are not given in tiles or FAF blocks.)
5. Values for the row and column pixel indices (or “y” and “x”) can be given in either IDL:long or IDL:double data formats.
6. When GIAS:GeoRegion data is used in a GIAS:AlterationSpec with a GIAS:GeoRegionType value of LINE\_SAMPLE\_CHIP, all the pixels in the full resolution image are extracted that fall within the pixels specified in the Chippable Image. (TBR) (Of course, even more pixels will often be extracted, as needed to avoid dividing existing FAF blocks.)

When image coordinates are being used, the “upper left” corner of a UCO:Rectangle is the corner where the row and column pixel indices have their numerically smallest values (closest to 0, 0). The “lower right” corner is the diagonally opposite corner, where the row and column pixel indices each take on their maximum values. When integer valued row and column numbers are

used for the “lower right” corner, the referenced pixel is included in the rectangle retrieved. When floating point valued row and column numbers are used for the “lower right” corner, those numbers are first rounded to the closest integer, before any conversion to positions in the full resolution image. The pixel referenced by the rounded values is included in the rectangle retrieved.

### 30.1.2.2 Ground Coordinates

When ground coordinates are being used, the values of “x” and “y” in the UCO:Coordinate2d data type and in all similar data (including a BQS query and the UCO:Coordinate3d data type) are interpreted to mean:

1. All latitude and longitude values are in the WGS-84 ground coordinate reference system (whenever the related Geographic\_datum property has the value “WGS84”, or defaults to that value).
2. The longitude is used for the “y” ground coordinate value, and the latitude is used for the “x” value.
3. Longitude values can range from -180 degrees to +180 degrees. Longitude values are positive East of the Greenwich prime meridian, and are negative West of the Greenwich meridian.
4. Latitude values can range from -90 degrees to +90 degrees. Latitude values are positive North of the equator, and are negative South of the equator.
5. The longitude and latitude (or “y” and “x”) are in degrees units when recorded as single numbers (not radians or arc-seconds). Note that in the BQS, longitude and latitude can be alternately specified in degrees, minutes, and seconds.
6. Values for longitude and latitude (or “y” and “x”) can be given in either IDL:long or IDL:double data formats.

When ground coordinates are being used, the “upper left” corner of a UCO:Rectangle and similar data types is interpreted to mean the Northwest corner of the desired rectangle. The “lower right” corner is the diagonally opposite corner, or Southeast corner. (Note that a rectangle cannot be specified to surround the North or South pole.)

### 30.1.3 The following describes more specifically the list of packaging specifications identified in Appendix 30, Table 30.1.1-1.

30.1.3.1 TARUNC - TAR UNCompressed consists of multiple files into one file with a .tar extension.

30.1.3.2 FILESUNC - Files UNCompressed is returned as a filelist, no bundling required.

30.1.3.3 GBUNC - GBS UNCompressed Filelist passed to the GBS utility, the returned files get shipped.

30.1.3.4 TARZIP - TAR ZIPped consists of multiple files into one file with a .tar extension, then that file will be zipped into another file with a .zip extension(.tar.zip).

30.1.3.5 FILESZIP - FILES ZIPped consists of multiple files zipped into one archive and shipped with a .zip extension.

30.1.3.6 GBSZIP - GBS ZIPped consists of multiple files zipped into one file with a .zip extension, and then shipped to GBS for wrapping and transport.

30.1.3.7 TARGZIP - consists of multiple files into one tar file with a .tar extension, and then the tar file is gzipped. The resulting extension is .tar.gz.

30.1.3.8 TARUNC - TAR UNCompressed consists of multiple files into one file with a .tar extension.

30.1.3.9 FILESGZIP - consists of multiple files which are individually into multiple files. Each will get a .gz extension.

30.1.3.10 GBSGZIP - consists of multiple files gzipped to multiple files, each with a .gz extension, and the resulting file list is sent to GBS for delivery.

30.1.3.11 TARCOMPRESS - Multiple files are tarred into one single file with a .tar extension, and the result is compressed with the standard Unix utility. The resulting extension is a .tar.Z.

30.1.3.12 FILESCOMPRESS - Multiple files are compressed individually, each with a .Z exrenion. Multiple files to multiple files.

30.3.3.13 GBSCOMPRESS - Multiple files are compressed individually, each with a .Z extension. The resulting file list is then sent to GBS for delivery.